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THE OBJECTS OF THE ASSOCIATION ARE: To examine, foster, and co-ordinate the activities of special libraries, information bureaux, and similar services; to act as a clearing-house for these services; to develop the usefulness and efficiency of special libraries and information bureaux under whatever titles they may function; and generally to promote, whether by conferences, meetings, or other means, the wider dissemination and the systematic use of published information.

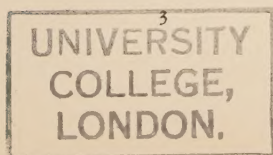
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 270 H. V. M. ROBERTS. Royal Institute of British Architects.
 271 MISS I. ROBERTSON, M.Sc. Kodak, Ltd.
 272 H. W. ROBINSON. The Royal Society.
 273 S. RODOWICZ. Centre national polonais de Documentation technique.
 274 E. ROSENBAUM, Ph.D. Société d'Ingenieurs à Varsovie. British Library of Political and Economic Science.
 *275 DR. W. ROSENBERGER. Keesings, Ltd.
 276 MISS G. M. ROSEVEARE. Imperial Bureau of Pastures and Forage Crops, Aberystwyth.
 *277 MISS M. ROTHBARTH, DR. PHIL. International Institute of Intellectual Co-operation.
 278 H. ROTTENBURG, M.A., A.M.I.E.E.
 *279 BIBLIOTHEKSDIREKTOR DR. W. RUST. Rep.: The German Government. Deutsche Bucherci.
 *280 K. A. RYDE, M.C., A.L.A. Croydon Public Libraries.
 281 L. A. SAYCE, M.Sc., Ph.D. F.Inst.P., F.C.S., F.I.C. King's College Library, Newcastle-upon-Tyne.
 282 BIBLIOTHEKSDIREKTOR DR. W. F. H. SCHÜRMEYER. Rep.: The German Government. Stadtverwaltung, Frankfurt-am-Main.
 283 DR. R. SCHULTZE.
 284 W. K. SCUDAMORE.
 285 MAJOR E. L. SELLARS, M.C., M.Sc. I.C.I. (Alkali), Ltd.
 286 DR. S. F. SHADMAN. Rep.: The Imperial Government of Iran.
 287 D. SHAPLAND. Sheffield City Libraries.
 288 MRS. D. SHAPLAND.
 289 MISS M. SHAW, B.Sc. J. Lyons & Co., Ltd., London.
 290 R. L. SHEPPARD. Bureau of Hygiene and Tropical Diseases.

- 291 DR. SIE SHOU-KANG. Rep.: The Chinese Government.
 292 E. N. SIMONS. Edgar Allen & Co., Ltd.
 *293 W. SIWOLOWOW. Informationsstelle für Technisches Schriftum,
 Berlin.
 294 MISS E. M. SMELT, B.PHARM., Pharmaceutical Society of Great Britain.
 A.L.A.
 295 J. F. SMITH, F.R.S.A., F.S.A. Liverpool Public Libraries.
 296 L. S. SPENCER, C.B.E., M.A., Mineralogical Society.
 Sc.D., F.R.S.
 297 P. S. SPOKES, B.Sc., M.A., Imperial Forestry Institute, Oxford.
 F.S.A.
 298 MRS. P. S. SPOKES. Imperial Institute, London.
 299 H. SPOONER. Leicester Public Libraries.
 300 ALDERMAN C. SQUIRE. The Yorkshire Electric Power Co.
 301 MISS H. M. STANIER. British Standards Institution, London.
 302 J.F. STANLEY, B.Sc., S.C.G.I.,
 A.M.I.E.E.
 303 J. H. STOKES. Kodak, Ltd.
 304 W. STRATMANN. Fotokopist G.m.b.H.
 305 W. G. SUTTON, M.Sc., A.I.C. Imperial Bureau of Dairy Science, Reading.
 306 J. A. SYMINGTON. Leeds University.
 307 MRS. SYMINGTON.
 308 N. J. SZENCZI, M.A., Ph.D. Rep.: The Royal Hungarian Government.
 Ministry of Education, Budapest.
 *309 H. A. TAYLOR. Institute of Journalists, London.
 *310 MRS. H. A. TAYLOR.
 *311 GENERALSTAATSBIBLIOTHEKAR Nationalbibliothek, Vienna.
 DR. TEICHL.
 312 MISS L. G. THOMERSON, Printing and Allied Trades Research Associa-
 B.Sc. tion.
 313 A. F. TOOTH, M.A., F.L.A. University College Library, London.
 314 MISS M. TOUGH. London Press Exchange, Ltd.
 315 MISS B. M. H. TRIPP, B.Sc. Institute of Petroleum, London.
 316 L.O.T. TUDEER, Ph.D. Rep.: The Finnish Government.
 Bibliothèque de l'Université, Helsingfors.
 317 J. M. H. VAN ANROOY. N.V. Provinciale Limburgische Electriciteits
 Maatschappij, Maastricht.
 318 C. G. VAN DER BOOM. General Post Office Administration, The
 Hague.
 319 MISS A. P. VAN DER VEEN.
 320 DR. F. C. VAN HEURN. Bataafsche Petroleum Maatschappij, The
 Hague.
 321 PROF. DR. G. VAN ITERSON, Jr.
 322 MISS E. V. WAKEMAN. British Film Institute.
 323 MISS M. WALKER, B.A. ASLIB Staff.
 324 BIBLIOTHEKS-RAT C. WAL- Technische Hochschule, Aachen.
 THER.
 325 E. K. WATERHOUSE, M.A.
 326 H. B. WELLS, M.A. Co-operative Reference Library, Horace
 Plunkett Foundation, London.
 327 L. C. WHARTON, M.A., British Museum.
 F.C.A.
 328 MISS M. E. WHITAKER, B.Sc. British Non-Ferrous Metals Research Associa-
 tion.
 329 E. W. WIGNALL, M.A. Museums Association, London.
 330 J. A. WILCKEN, B.Sc., Ph.D. Institution of Electrical Engineers, London.
 331 D. H. WILLSON, B.A. Royal College of Veterinary Surgeons, Lon-
 don.
 332 J. K. WINNER. Building Industries Services, Ltd.
 333 G. WOODWARD, A.L.A. British Cast Iron Research Association.
 334 J. E. WRIGHT. Post Office Engineering Research Station,
 London.
 335 R. W. M. WRIGHT, F.R.S.A. Victoria Art Gallery and Municipal Library,
 Bath.

- 336 MISS O. B. BERTIE. Agricultural Economics Research Institute, Oxford.
- 337 R. H. BOMBACK, B.Sc., A.I.C. Kodak, Ltd.
- 338 MRS. R. H. BOMBACK.
- 339 MISS F. BRADLEY. The Special Libraries Association, New York Branch.
- 340 R. CORY. Royal Institution of Great Britain.
- 341 MRS. R. CORY.
- *342 A. D. CUNNINGHAM. Rep. : New Zealand Government.
- 343 D. DUMA, D.P.A. (L.S.E.L.) Rep. : The Government of Albania.
- 344 MME M. FALLOT. International Institute of Intellectual Cooperation.
- 345 GUY KEELING, B.A. Queen Mary College, London.
- 346 H. W. KEMBER. Rep. : H.M. Government in Canada.
- 347 J. LARREA. Rep. : The Spanish Government.
- 348 PROF. E. LOTH. Rep. : The Government of Poland.
- 349 DR. IR. A. W. JOH. MAYER. International Federation of National Standardising Associations.
- 350 J. MUUSSES.
- 351 E. NELMES. Royal Botanic Gardens, Kew.
- *352 PROF. O. ODLOZILIK. Rep. : The Czechoslovak Government. Czechoslovak Ministry of Education. Caroline University, Prague.
- 353 H. V. C. SCORER. Lincolnshire and Central Electricity Supply Co.
- 354 M. STUMBERGS. Rep. : The Government of Latvia.
- 355 DR. GENERALDIREKTOR H. UHLEND AHL. Deutsche Bücherei. Reichsministerium für Volksaufklärung und Propaganda.
- 356 H. G. WELLS, D.Litt.
- 357 BRIGADIER H. S. L. WINTERBOTHAM, C.B., C.M.G., D.S.O. International Union of Geodesy and Geophysics.

* *Unavoidably prevented from attending.*

Authors of papers whose names do not appear in the above list :

- JULIEN CAIN. Bibliothèque Nationale, Paris.
- JEAN CORDEY. Bibliothèque Nationale, Paris.
- T. M. HERBERT, M.A., Research Dept., London Midland and Scottish Railway.
- M.I.MECH.E.
- DR. A. JÜRGENS. Reichstauschstelle im Reichs- und Preussischen Ministerium für Wissenschaft, Erziehung und Volksbildung.
- DR. ING. T. LEARDINI. Centro Volpi, Venice.
- G. LIGHTFOOT, M.A. Council for Scientific and Industrial Research, Commonwealth of Australia.
- MISS LINDA H. MORLEY. Industrial Relations Counselors, Inc., New York.
- MISS ROSE L. VORMELKER. Business Research Library, Cleveland Public Library.

Editorial Note.

THE papers that follow constitute a record of the proceedings of the Fifteenth Conference of the Association. Written papers were, as a rule, prepared in advance by the speakers, and these have been reprinted in full. No verbatim reports of the discussions were made, but, with the aid of notes taken by the Stewards of the meetings and provided by the various contributors to the discussions, as full a report has been printed as the limitations of space permit. The editors take this opportunity to acknowledge their indebtedness to all those members of the Conference who have sent in notes of their contributions.

An index of the contents of the Report is printed at the end. Copies of the Reports of the fourteen previous Conferences are still available, and the fifth Report contains an index to the first five.

These Reports are indexed in the Industrial Arts Index of The H. W. Wilson Company, of New York.

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LONDON, W.C.1.

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Introductory Note.

The Fifteenth Annual Conference of ASLIB was distinguished from its predecessors in that advantage was taken of the fact that the Fourteenth Conference of the International Federation on Documentation was to be held in Oxford at Lady Margaret Hall. By arranging to hold the ASLIB Conference in the same building during the last three days of the International Conference, members of both organisations had opportunities for the exchange of views and experiences, and joint meetings were held on the Saturday and Sunday mornings.

The dual Conference attracted many, and during the week-end, when members of both organisations were present in force, the list of those present included over 350 names. Since some of these belonged to both organisations all the names have been combined into one list which is printed in the ASLIB Report and should be studied by those who are interested in the wide variety of contacts thus established.

Illness, unfortunately, prevented Sir William Beveridge from attending any part of the Conference, and members were therefore deprived of the pleasure of listening to his Presidential address on the "Use of Books in Social Science". It is to be hoped that this may be a pleasure to come on some later occasion during his term of office.

Many ASLIB members attended for the whole five days and participated in the excursions and social functions arranged by the International Federation for Documentation. These included a reception by the Vice-Chancellor of Oxford University at the Ashmolean Museum, a banquet given by His Majesty's Government in the beautiful hall of Christ Church College and presided over by Lord Stanhope (President of the Board of Education), tea at Baldon House by kind invitation of Dr and Mrs. Priestley, and a reception given at the Town Hall by the Mayor of Oxford. Visits were also paid to the Bodleian Library and various Oxford colleges, the Oxford University Press, and the Morris Motor Works, while on the Sunday afternoon an excursion to Stratford-on-Avon took place.

The papers given during the International Conference will be found in the Transactions of the Fourteenth Conference of the International Federation on Documentation, including the papers given at the Joint Sessions. The present ASLIB Report contains all those papers given at the specifically ASLIB meetings, and, in addition, the British, American, and some of the Continental papers given at the Joint Sessions. Lack of space has made it impossible to print all the Joint Sessions' papers in full, but in such cases a summary gives an indication of the subject covered.

The Year's Work of ASLIB, 1937-38.

A Brief Survey.

The Fourteenth Annual Conference was held at Gonville and Caius College, Cambridge, from September 24th to 27th, 1937. The attendance was above the average for recent years and a new feature was introduced, thanks to Professor R. S. Hutton's energy, when a most interesting exhibition of Microphotographic apparatus was arranged in support of some of the papers.

It will be remembered that ASLIB's finances at the beginning of the year 1937-38 started with the handicap of a deficit for the previous financial year. As was anticipated, this has evened itself out, but it has meant that no new enterprises could be undertaken. The energies of the ASLIB staff have, therefore, been directed towards the development of existing services and publications.

Greatly to the regret of the Council, the President, Sir Harry Lindsay, was unable to undertake a second year of office on account of his absence abroad for several months. Nevertheless, the Association has been fortunate again this year in that it has secured the consent of Sir William Beveridge, K.C.B., F.B.A., LL.D., to accept nomination as President for the forthcoming year.

THE ASSOCIATION'S COUNCIL AND COMMITTEES.

The first meeting of the new Council, elected at the last Annual General Meeting, was held on November 1st, 1937, when Mr. Arthur F. Ridley was re-elected to the Chair and Mr. H. H. Johnson was re-elected as Vice-Chairman. The Council received with regret the resignations of Mr. F. A. Hoare and Professor B. W. Holman, the former of whom had given most valuable help as Hon. Secretary since 1933. In December, 1937, the Council received with further regret the resignation of Miss M. E. Cleeve.

During the year six meetings of the Council were held. One new member of Council, Mr. E. Lancaster-Jones, was elected at the Annual General Meeting in September, 1937, and his valuable co-operation is greatly appreciated. A full list of the personnel of the Council will be found on p. 4.

The Council appointed a Committee consisting of Dr. S. C. Bradford, Mr. R. Brightman, Miss B. M. Dent, Mr. J. J. Eaton, Mr. G. Ellis Flack, Mr. B. M. Headicar, Professor R. S. Hutton, Miss D. W. Hughes, Mrs. C. S. Orwin, Miss E. W. Parker, Mr. J. G. Pearce, and the Honorary Officers to make arrangements for the 1938 Conference.

FINANCE AND MEMBERSHIP.

The audited Annual Accounts for the year ended June 30th, 1938, have been circulated to all members and will come before the Annual General Meeting for consideration. They will be found printed on p. 129.

The year ended with a balance in hand of £134 as compared with

£101 last year. Although this sum included certain subscriptions paid in advance, the audited accounts show an excess of income over expenditure of £55 as against the deficit of £69 last year. This result, though satisfactory, has only been achieved through stringent economy, through the postponement of all new ventures, and with a special effort by the Council towards the end of the year in order to avoid a deficit. ASLIB enlarged the office staff in 1936, but the increased use of the ASLIB services has fully offset the increase in personnel.

The ASLIB membership, which now stands at 325 as against 308 at the same period last year, shows a satisfactorily steady increase, but a very much larger membership is desirable if the Association is ever to be able to fulfil those functions which rightly belong to it.

THE "ASLIB BOOK-LIST."

(Quarterly recommendations of recently published Scientific and Technical Books.)

Non-member subscribers now number 201 as against 160 at the same period last year. Since ASLIB cannot afford to advertise, this increase in the third year of publication is a welcome testimony to the value of the list.

The Council elected the following to act as Editing Committee for the *Book-List*: Dr. S. C. Bradford, Mr. B. C. Curling, Miss B. M. Dent, Miss Mizpah Gilbert, Mr. C. H. Gray, Professor R. S. Hutton, Mr. E. Lancaster-Jones, Dr. E. E. Lowe, Mr. E. R. McColvin, Mr. A. F. Ridley, Mr. J. D. Stewart, and Mr. J. E. Walker.

"SELECT LIST OF STANDARD BRITISH SCIENTIFIC AND TECHNICAL BOOKS."

This publication, first issued in May, 1937, proved to be so successful that the British Council asked ASLIB to bring out a second edition, enlarged to include a section on Agriculture and another on Medicine and Surgery, the latter being contributed by the British Medical Association. This second edition, enlarged and revised, was issued in May, 1938.

THE ASLIB ENQUIRY BUREAU.

Steadily increasing use is made of this service. Including those enquiries which are specifically concerned with the locating of copies of books or periodicals for purposes of loan, over 700 were dealt with during the year as against 412 during the previous twelve months, an increase of 77 per cent. Some enquiries are, of course, comparatively simple, but many require considerable investigation. When it is remembered that the ASLIB office staff consists of the General Secretary and two assistants, it will be clear why, without further financial backing that would provide additional secretarial staff, it is impossible for ASLIB to undertake many of those projects that would otherwise come within its scope.

"ASLIB DIRECTORY."

The new edition of the *ASLIB Directory* is still urgently needed, but still remains amongst those projects that have been held in abey-

ance until adequate finances permit the Publishing and Directories Committee to recommend the undertaking.

“ASLIB INFORMATION.”

This four-page publication continues to act as a medium for the interchange of information amongst the members of the Association. Our grateful thanks are again due to those who have contributed articles and reviews to the periodical.

ASLIB REGISTER OF SPECIALIST TRANSLATORS.

A Round Table Meeting of ASLIB members was held during the 1937 ASLIB Conference, when recommendations for the re-organisation of the Panel of Expert Translators were considered. Subsequently the Council appointed the following Sub-Committee to carry out the approved suggestions: Mr. R. Brightman, Mr. B. Fullman, Mr. C. Gray, and Miss E. W. Parker.

The necessary registration with the London County Council was effected under the title of the *ASLIB Register of Specialist Translators* and the new regulations became operative on January 1st, 1938. Including many of those whose names were on the old Panel, eighty-six members have been duly enrolled under the modified scheme. The Sub-Committee has now prepared a special descriptive leaflet which has been printed to serve both as propaganda for the Register and also to set out standards of qualifications desirable in technical translation.

THE ASLIB LUNCHEON

The Association held a luncheon at the Café Royal, London, on April 27th, 1938, at which over eighty people were present. The Chair was taken by the President of ASLIB, Sir Harry Lindsay, K.C.I.E., C.B.E., Director of the Imperial Institute, who began his speech by saying that he hoped that the luncheon would prove to be a successful experiment which would be repeated in other years.

The two guests of honour were Sir Clement Hindley, K.C.I.E., Chairman of the Racecourse Betting Control Board and Vice-President of the Institution of Civil Engineers, and Sir Ian MacAlister, Secretary of the Royal Institute of British Architects, both of whom referred in their speeches to the part played by ASLIB as a guide to sources of specialised information.

At the close of this summary of the year's work, the Council wishes to express its sincere thanks to Sir Harry Lindsay, who retires after serving as President of the Association during the previous twelve months. His active interest in the work of the Association has been much appreciated.

ARTHUR F. RIDLEY, *Chairman of Council.*
EDWARD CARTER, *Hon. Secretary.*
E. M. R. DITMAS, *General Secretary.*

Problems of International Documentation.

By DR. J. ALINGH PRINS.

By documentation we mean :

1. The gathering of documents.
2. Classification of them.
3. To distribute, to put them at the disposal of the user.

These activities are not new. In libraries documents have been gathered, classified, and put at disposal for centuries.

Whence does the present cry for documentation come into the world ?

Institutes of Documentation have been, or are being, established in several countries ; in 1937 there was held a World Congress of Documentation at Paris ; a powerful International Institute for Documentation, now called the International Federation for Documentation, was formed years ago.

The cause can be found for the greater part in the requirements of modern technology.

To make clear the connection between these two subjects, to begin with, I will have to speak a word about the development of technology and its significance for social life to-day.

All technical development depends on inventions, which we owe to the inventors. In these inventions there has come a very important change of late. The romantic idea of invention has gone. Invention has been organised.

How has it been organised ? Two very important groups of inventors have been combined.

The first group is that of professional inventors, often able technical men, sometimes more or less possessed by a mania of inventing, often thinking illogically, very intuitive, and able to combine ideas in a surprising way.

The other group is that of scientific men, working in scientific ways, naturally logical, sharp observers, born seekers and finders.

Both groups are of little use for technology. The professional inventors generally cannot afford the money necessary for realising their invention. The over-estimation of their inventions makes them bad business men and causes success in this group to be rare and mostly accidental.

Moreover, it is difficult to get the assistance of technical experts, because inventions raise a certain resistance by their newness.

The group of scientific workers has so little to do with technology that they are liable to overlook the possibilities of applying their inventions, moreover their mind is not directed towards practical business. Their work often runs concurrently with technology without being connected with it.

Nowadays it has been possible to make these two groups useful for technology by bringing them into research laboratories. These research laboratories may be parts of big concerns, well provided with

capital. There the inventors have the most modern and expensive requisites at their disposal : behind them there is a staff of co-operators to sift the results and to examine their real worth, while, finally, the technical experts of such a concern, with their wide practical technical knowledge, can lend every possible assistance.

While the professional inventors especially come to their inventions by means of existing scientific knowledge, those who are scientifically trained often succeed in collecting new knowledge. In this way it is possible in the research laboratories to do full justice to ingenious thought and to convert it wholly into technology.

By the co-operation of all parties interested, the time which must elapse between the conception of an invention and its practical realisation will be much shortened and there will be reached a rate of technical development as never before.

This idea of research laboratories is rather new. The first was probably that of the General Electric Company at Schenectady (United States of America) in the year 1901. The enormous proportions which this way of inventing has assumed are illustrated in a report by Langmuir, a pioneer-inventor himself, in the *General Electric Review* of 1935, where he says that in that year in the United States 1,200 laboratories with about 30,000 persons were engaged in industrial research work.

This development of the research laboratories has not been confined to the United States but is in full swing everywhere ; particularly in industrial countries. In Great Britain there are outstanding examples of this.

The consequences of research were inevitable.

It is impossible to give even a short summary of them here. However, I should like to illustrate with some examples the particular economic interest of a few inventions. I confine myself, therefore, to the problem of the raw materials.

Some time ago the most important element of nitrogenous fertilisers was sodium nitrate, which occurred as a mineral in Chili. Nowadays, in every country which has at its disposal coal or water-power, nitrogen fertilisers in a great many varieties are being produced from nitrogen of the air, and from hydrogen, of water. This may be called the replacement of the element of Chili saltpeter by the element of coal or water-power. The result of this has been that by means of artificial nitrogenous fertilisers, the price of which has been considerably reduced, the production of the soil has been increased. This increase is of an order of magnitude which will be clear to you if you will realise that the drainage of the Zuider Zee in Holland, a work costing about a hundred million pounds, can only increase the production of the Netherlands soil by 10 per cent, while the increased production resulting from better nitrogenous fertilisation of the soil is 30 to 40 per cent. When you consider that this increased production of the soil can be achieved over the world, the enormous importance of research work will be clear.

I will not expatiate any longer now but draw your attention to the fact that nowadays petrol can be prepared not only from petroleum but also from coal ; that silk is replaced by artificial silk made of wood and cotton ; wood, glass, and porcelain in many cases by

synthetic resins, such as bakelite, wool by artificial wool, made from cellulose as well as—and this is the most recent discovery—from skimmed milk ; and rubber by synthetic products derived from hydrocarbons.

And are not the raw material and the power resources necessary for manufacturing aluminium present in nearly every country, as a substitute for other metals ?

The above cases are only a few taken from many of them. Anyhow, we can learn from them that organised invention has thrown quite a new light upon the problem of raw materials ; it makes it possible for us to be much more independent of natural materials than we could ever have thought, and certainly it will be able to influence deeply the economic conditions of different countries.

And is not the problem of raw materials, however important it may be, in truth only a part of technology, and are there not a great many such parts of at least the same economic importance ?

I will take out of them one interesting point : that is mechanisation, replacing handwork by machines. It makes it possible to be independent of skilled labour ; it means that the work may be done anywhere in the world.

What will invention bring us in the near future ? I may draw your attention to the following facts :

The research laboratories are still developing ; a final equilibrium situation has not yet been reached. They are operating only on some departments of technology. A great many important inventions, made by individual inventors, are still barren efforts.

Beyond that the development of the technology creates the means for the exploration of new domains. Therefore it can be declared for certain that organised invention will develop greatly in the near future. The trend of the development of technology is this : to make everything anywhere.

Of late, another important factor has quickened the development of technology : I mean the tendency towards national economic independence whereby a country tries to prepare those products itself which are deemed to be indispensable in the case of war, even at a cost price which is higher than the world market price.

It will be clear that there is in this way a great stimulus for finding new materials and new methods of manufacturing existing materials. When you will realise that in various countries all parties concerned are obliged to co-operate for this purpose, with the aid of all government authorities, it will be clear that the rate of all technical development and its consequences can be greatly accelerated.

Summarising, we can state that an enormous development of technology is taking place with a consequent danger of economic disturbance. From this it follows that every country has to make use of all its available means to bring its technology in a higher degree of development. If this does not happen, a backsliding to a lower standard of living is unavoidable.

Now, in raising technology to a higher level, documentation is an important, even a necessary, help.

This is clear—research has to make its beginning with results known by science. Experience now teaches us that, in the field of technology, what has been found already by others is hardly ever known. I can prove this as follows :

In several countries patents are only granted after a preliminary examination, and the principal question is thereby about novelty. In Germany now, where the preliminary examination is rather severe, we can roughly estimate that 65 per cent of the applications are refused for reason of their being not new. For the 35 per cent which are indeed granted the claims have to be restricted in at least 90 per cent of the cases, because the invention was already partly known. From this it follows that at least 75 per cent of those who think themselves to have made a new invention were not in touch with what was already known in their own technical field. They repeat with much trouble and cost work that has been done already. And yet the greater part of these inventors are professional experts and industrialists who personally are very much interested in wasting as little cost and labour as possible. Documentation prevents unnecessary research and gives the right point where to begin. Therefore it is of the same value as research. Spending money for research and not for documentation means : wasting money.

1. *What problems arise ?*

In the first place arises the problem : *The accessibility of documentation written in foreign languages.*

Since the war, the production of original material in all fields of knowledge, in countries speaking the French, German, or English language, has shrunk rather than expanded. A movement in the favour of Japan and Russia is clearly indicated. In taking the publications in all fields of knowledge, those countries come in the first ranks. Important progress has also taken place in countries such as Hungary, Poland, and Czechoslovakia, which became independent after the Great War. The intellectual production in Slavish languages without Russia is more than that of France. No language attains more than 15 per cent of the world production.

The growth in strength of national feeling in the world also causes a certain restriction. All these things are counteracting severely the accessibility of information. The technical information of these countries does not reach us at all, or only in a slow way. An auxiliary language could perhaps give relief for technology ; anyhow, a solution is urgently necessary.

2. *The problem of gathering the documents.*

I begin with a word of praise for the librarians. They have always been willing to collect and preserve documents and because of this libraries are now so important in the case of documentation.

In the scope of science technology the principal sources are :

- (a) Technical periodicals.
- (b) Patent literature (about 200,000 patents are granted every year throughout the world).
- (c) Books on technology.
- (d) Technical and scientific typescript or manuscript reports and other unprinted papers.

The importance of periodicals has grown, especially through the development of research laboratories. Also in the laboratories of private firms the scientific workers desire that the results of their labour should be published, and even quickly published, so that gradually the periodicals have come to a higher scientific level. At

least 15,000 technical periodicals of value are published yearly, containing about 800,000 original articles. The patent literature is more or less complete in many countries, and available in one central place; the periodicals are spread over the whole world. Partly they are available in the big libraries; in many cases they are available in small collections of individuals or associations.

Although it is difficult to get reliable statistical data about the number of published books, a few approximate data might be mentioned. Roughly estimated, at least some 28,000 books on science and technology appear yearly, being about 12 per cent from the total amount of the book production, which surpasses 235,000. Books are relatively of less importance for documentation than the earlier mentioned sources because their contents are taken from the periodicals and the patent literature.

The unprinted technical and scientific papers are principally to be found in the laboratories of big concerns and universities. It is hardly possible to give even a rough estimate of their number.

The printed material is scattered over the world in many big and small libraries and in private possession.

The enormous national libraries in Paris and London are said to possess 4,000,000 and more volumes; Washington has perhaps more than 5,000,000 volumes. The 3,000 largest libraries in Germany are estimated to be in possession of more than 55,000,000 volumes.

In the *Minerva Jahrbuch der gelehrten Welt* 6,800 libraries are mentioned; in a random test of completeness we discovered, however, that of the 200 libraries of The Hague only one-third were mentioned in *Minerva*. It is often in the smaller, very specialised libraries that one can find books or periodicals that are not to be found elsewhere.

In many countries there is already a close co-operation between the larger libraries, so that gradually we get informed about the number of libraries and their contents. An accurate inventory of the material existing in every country is still needed, for which the co-operation of all libraries, associations, industries, and individuals will be necessary. Institutions such as the National Central Library and the Science Library in this country are exemplary.

If this making of inventories should take place in every country, then an international inventory would be accomplished at the same time. In this connection it is worth noting that more than forty years ago Otlet and Lafontaine thought it possible to establish a centre for the whole of Science in Brussels. The enterprise was too gigantic to give satisfactory results. In the near future the object will not be attained otherwise than in a federative way.

3 *The classification of the documents.*

The collected material can only be of value if it is orderly. It must be possible to answer the question: What is known about a certain subject? The collected material must be analysed and classified by subject according to a fixed system.

As for periodicals, several of them occupy themselves only with gathering abstracts or bibliographical notices of original papers. As an excellent example I can mention, e.g. the *Chemisches Zentralblatt*, which publishes about 60,000 abstracts annually. Further, there is the *Industrial Arts Index* with 50,000 references. Altogether there

are about 200 papers containing abstracts or notices on natural science and 250 on technology.

Still, it would be a mistake to say that all published articles are noticed in their abstracting or bibliographical periodicals. Detailed investigations in the Science Library at London taught Dr. Bradford that only one-third of all valuable articles published are abstracted. Probably this is connected with the fact that only one-third of the articles concerned with a special subject are published in the technical periodicals devoted to that subject, another third of the articles appears in periodicals devoted to general science or technology, and the remaining third in periodicals where the scope is more or less related to the subject of the article.

Abstracting is consequently far from perfect as yet and it will be necessary to aim seriously at a better arrangement. An important contribution to this task could be made by national institutions in publishing abstracts or notices of the articles which have appeared in their country, so far as these have not been mentioned in the technical abstracting periodicals.

For this classification by subject, it will be necessary to aim at one universal system of classification. The abstracting periodicals often have quite different systems of classification, often they make use of "headings" which are also established from quite different points of view, so that it is quite difficult to find in the different abstracting journals the abstracts treating the same subject. It is of less importance which universal classification system is chosen. The main point is, that one system should be used. This is of more importance than that this system should be logical in every way. For, what to-day seems to be logical, is often no more so after some time.

To give you some figures about costs of classifying: the Dutch patent office spends yearly about £7,000 in reclassifying foreign patents into its own classification. If classification were standardised those costs could be cut down to a fraction of that sum.

For the present it can be stated that the Universal Decimal Classification, which originally came from Melvil Dewey and has been improved by Otlet and Lafontaine at Brussels, and finally has been greatly developed under the direction of Donker Duyvis, with the collaboration of specialists in many countries, has shown itself to be of great value for the ordering and classification of the material.

4. To put the material at the disposal of the user.

This is, of course, the main thing. As for technical documentation, industry needs the facts and wants them as complete and as soon as possible. So it is not sufficient to show the way to the user where he can find the information, but the information must be given to him ready and complete. This requires personnel having not only enough technical training but also sufficient knowledge of languages to make the right choice of the material. As a consequence the original material must remain at the same place, where it must be available whenever there is a demand for information.

As a result also modern methods of reproduction have been developed which make it possible to procure copies of material at very low cost. I refer to photography and the lately developed micro-photography.

Thus, although documents are now, and for the future, spread over the whole world, it is possible that copies of the same value as the original may be available for everyone and everywhere they may be needed. The development of these methods is one of the most important factors in the field of documentation.

In the above, I have spoken only about technical documentation. I showed its enormous practical importance, which compels us to co-operate in producing a solution of all these questions. In other departments these problems are substantially the same; although the economic interests may be often of less importance.

Yet I will draw your attention to one of these departments: that of the administration, of Government, State, and municipal corporations, as well as of big industrial corporations. One aspect of documentation, the collection of documents, is of less concern when these documents appear automatically in the ordinary routine; classifying and putting at the user's disposal, however, are here of great importance for the work of the office. Documentation has to be made quickly and completely in administration as well as in technology.

I mention here that among about 1,000 communities in all in the Netherlands there are about 600 of them using the same system of classification for their administration, the advantages of which it is not necessary to explain.

The main problems of documentation present themselves in all countries; for several departments of science they are international, too. The question is: How will we be able to solve these problems.

The solution will have to be first a national one. In every country there will have to be a central organisation, in which librarians, documentalists, industrialists, and scientific workers are associated. In any case, this organisation will have to act as a clearing institute to make the necessary connection between the parties interested. In every country there are many documentation centres, and their mutual connection would be advantageous.

Probably this national organisation will have to be mainly federative, because in this way much useful work can be done at low cost. To enlarge on this is unnecessary, because every country will have to organise such collaboration in its own way.

Certainly the connection between these national organisations will have to be a federative one, because in this way results of the national organisations can be made most useful, while at the same time deliberation about methods and uniformity of classification is possible.

Besides these national institutes I mention the international associations. Their number is, however, so large that it is difficult to join all of them in an organisation which will be able to co-operate.

For the near future it seems better to invite those international organisations which are interested in documentation to associate themselves with the international federation.

Finally, I may give as an example the way in which technical documentation has been accomplished for the benefit of industry. In the Netherlands a preliminary examination is made in the case of patents applied for. The principal question is: Are these applications new? Now it is clear that the question, what is known in a particular sphere of human knowledge, practically comes to the same thing as the question whether an invention is new or not. In reality a patent

office with preliminary examination can be considered as a technical documentation centre.

For the greatest part the material is composed of the patents, which the different patent offices are sending to one another. In The Hague there are about 3,000,000 patent documents, subdivided into about 15,000 classes, sub-classes, and groups. This patent literature forms an excellent collection of documentation material.

Next to this material comes the documentation of periodicals. In former times this form of documentation was not so important, but with the rise of the research laboratories its importance grows daily and the intensive use of the abstracting periodicals for this purpose is clear. To give you an idea about the importance of this I may mention that in the Patent Office in the Netherlands, annually about 50,000 abstracts are set on cards and classified by the Universal Decimal Classification, which is shown thereby to be an excellent classification system. Frequently it is necessary to mention these abstracts in different places, and therefore 125,000 cards are needful. The abstracting periodicals, such as the *Chemisches Zentralblatt*, are not placed on cards, but are used directly. Also, our Patent Office is gathering documents and classifying them. It does not distribute them.

Now, in what way can this available material be a help to industry ? How is it distributed ?

The solution has been found by establishing the Institute for Documentation in the building of the Patent Office. In 1934 this Institute was allowed to make use of the material for the preliminary examination.

As the Institute has further at its disposal the whole national apparatus and also the co-operation from other countries and the national institutes established there, indeed real information can be supplied.

After four years' co-operation with the Patent Office it can be said that there have been no serious difficulties.

The number of demands for information coming from the industry is always increasing, so that at the moment five engineers are working the whole day in the service of the Institute.

I do not think that what was performed in Holland must be done in other countries in the same way ; I have given the examples to show you some possibilities.

At last you may demand who must perform documentation. Librarians ? Documentalists ? I think it does not matter at all ; the principal thing is this : it must be done well.

DISCUSSION.

The chair was taken by PROFESSOR A. F. C. POLLARD, President of the British Society for International Bibliography. DR. H. A. KRÜSS opened the discussion by saying that he had had the privilege of closely co-operating during recent years with their President, Dr. Alingh Prins, so that he knew how much was owed to him and his collaborators for having built up and developed the International Federation that was now convened in this beautiful city of culture and flowers. Dr. Krüss thought they ought to thank him and those who had worked with him for all they had done, so much the more as Dr. Alingh Prins had agreed to continue in his office of president for more years to come.

They were dealing to-day with international co-operation. Co-operation beyond national frontiers was important at all times. It was so much more important in times of trouble. As chairman of the German delegation to the Conference

Dr. Krüss wished to say that they whole-heartedly supported everything that led to the promotion of such co-operation, and that they sincerely hoped and trusted that this Conference and their efforts, in this modest way, might be a contribution to the mutual understanding which was so much desired by all.

MR. W. P. DREAPER stressed the point that documentation was of equal importance to research, and illustrated his point by quoting the case of a private concern which compiled a bibliography of 240 references relating to a particular subject, and was informed when the bibliography was passed to a central organisation that it could immediately be extended to 800 references, showing that there is always a five-to-one chance that research work will be duplicated.

MR. H. ROTTENBURG said that he had come to the Conference a whole-hearted one hundred per cent adherent of the Universal Decimal Classification, but from hearing others' views he had begun to wonder if there was not a danger in insisting that all supporters of the system must necessarily believe in it down to the *n*th decimal figure. He felt that there were cases where it would be better to say to an objector, "Well, if you can't accept the Universal Decimal system down to the last figure, why not go as far as you can and then beyond that use your own further subdivisions." He believed that if the Universal Decimal system was as sound as they believed, there would come a moment when the objector would admit that perhaps his final subdivisions were not quite as good as the Universal Decimal system. He would then have a shorter road back to the Universal Decimal figures than if at the start a whole-hearted hundred per cent adherence to the Universal Decimal system had been demanded, and by so doing he had been made a hundred per cent opponent. They must have faith in the Universal Decimal system and realise that if it was as good as it was thought to be, it would slowly but surely convince and convert opponents.

Let it be realised that it had crossed international and sectional frontiers. Let it be also realised that in the sphere of technical invention, labour-saving inventions seemed at one time to be marching towards a glorious ideal of making everything so cheap that all could buy them. In time matters have developed so that in practice a manufacturer who to-day dispenses with a hundred workmen by the adoption of labour-saving inventions has actually destroyed a hundred customers of some other manufacturers. The consideration of that tragedy had inspired Mr. Rottenburg with the thought that international documentation as expressed and so eloquently explained by Dr. Alingh Prins demanded not less but more workers for its service, and, moreover, workers who were not mere workers but thinkers.

The discussion was closed by PROFESSOR POLLARD, who said that they had listened to an interesting and inspiring paper in which it appeared that the outstanding theme was the strength engendered by unity of action and the desirability of unity of method in documentation. Such unity of method must be the first step to clear thinking and economic action.

For the same reasons he was sure that all must desire the unification of documentary interests and activities in this country, and ardently hope that it would be possible in the near future for all such bodies to amalgamate and thereby augment the power and action of the central body at The Hague.

A hearty vote of thanks to Dr. Prins for his interesting paper was moved and accepted with acclamation.

The Possibilities of a Simple Information Service.

By T. M. HERBERT.

The Author's only excuse for contributing to the present symposium is his feeling that many more information services could usefully be started in industry if it were more generally realised that a simple and relatively inexpensive organisation can fulfil a definite need. Six years ago, at the 1932 ASLIB Conference, he outlined the information service which had then just been set up and which now forms part of the activities of the L.M.S. Research Department. The object, then as now, was primarily to make known to the technical officers of the Company the results of external research work, and to suggest where possible its bearing on the problems confronting the various technical departments. It was hoped to achieve this end mainly by the production and circulation of a monthly bulletin of abstracts.

This bulletin has now appeared regularly for over seven years and normally consists of some 15-20 pages, containing between thirty and forty abstracts each month. There has been a considerable response from the two hundred or so individuals to whom the bulletin is circulated in that there is now a regular demand for the loan of original material. Further, a limited number of translations, mainly from the French and German, is undertaken. In an undertaking such as a railway the most diverse and often unexpected interests have to be catered for, which makes the selection of abstracts a somewhat difficult task; and, if purchases are to be kept within practicable bounds, it is essential to cultivate and utilise as many sources of borrowing as possible.

About three years ago, the centralisation of certain of the scientific staff in a new laboratory at Derby made it necessary to adapt the previous organisation to serve the needs of the research staff in the new building. A small library of standard works was provided and placed in charge of an assistant librarian, who works in close co-operation with the librarian in London. The latter also has an assistant in London mainly responsible for the circulation of publications and for obtaining material on loan from the various sources of supply.

The preparation of the bulletin presents certain problems due directly to the exceptionally wide range of subjects covered. It differs from the majority of similar reviews most of which have to deal with a more limited field, and a rigorous process of selection has to be employed. This involves the ultimate selection being made by someone with a reasonably intimate knowledge of the interests of the recipients, and the result can of necessity only be a cross-section of the most important published work in a wide field.

The material to be covered consists firstly of periodicals, journals, proceedings, etc., and secondly of reports from research associations, Government establishments, etc. The selection of items for the former group must be effected with the minimum of time and cost, if the simple and inexpensive character of the service is to be preserved. This means that much reliance must be placed on published bibliographies and abstract services, and a fairly wide selection of these are

obtained and scrutinised. As the bulletin is privately circulated it is legitimate to use existing abstracts wherever suitable, although it is realised that these may not, on occasions, correctly emphasise the particular aspect of an article that is of special interest to a particular individual. Subject and author indexes of all items appearing in the bulletin, as well as of certain other references not suitable for general circulation, are maintained at Derby and London.

A certain number of abstracts are, however, prepared from original articles and particularly from the second class of materials—reports. These form a very important part of the bulletin, which affords almost the only practicable way of bringing such publications to the notice of a wide clientele, since many of them, being available only to members of research associations, etc., are not reviewed in the technical or scientific press.

Each issue of the bulletin now results, as was originally hoped, in a large number of requests for the loan of the original papers, reports, etc. A response of 100 requests per month is not unusual, and in the majority of cases these requests have to be met by borrowing. It must also be remembered that owing to the geographical dispersion of the staff of a railway, most of the borrowed material has to be sent away from London and ultimately recovered.

A proper system of records, together with the necessary degree of importunity, has been remarkably successful in operating a scheme which involves ample opportunity for delay and even loss. This system of loaning, however, is an essential method of avoiding very heavy expenditure on purchases, and a special acknowledgment is due to certain librarians and librarians who have rendered the plan workable.

A limited number of periodicals are, however, purchased for circulation, and a small annual expenditure on standard works for the Derby Library is incurred. In a normal year this expenditure does not exceed £100.

The question of technical translation was very fully discussed at the last ASLIB Conference, but the fact that requests for translations are received from time to time makes it necessary to refer briefly to this subject. Translations are made by the librarians both in London and Derby, but doubt is sometimes felt as to whether the time and trouble involved has been justified. In many cases all that an individual requires is a general idea as to what a particular article contains, or, alternatively, the main point could be met by the translation of only a portion of the original: unfortunately, individuals who ask for translations are not always able or willing to specify the minimum amount of work that will meet their requirements. Then there is always the feeling that some other organisation may already have had a translation of a particular article prepared, leading once again to the suggestion that ASLIB, or some other suitable organisation, should set up a central pool or registry, from or through which translations could be borrowed by members.

Reading through these lines, the Author feels very conscious that perhaps the organisation he has described errs on the side of simplicity, but, nevertheless, he believes that it serves a definite need under circumstances where a much more elaborate and costly information service, which would be necessary for self-sufficiency, could not be justified.

Intelligence and Information Bureaux in Great Britain.

By FREEMAN HORN.

Practically every branch of Science and Industry to-day possesses its own intelligence organisation, in addition to those run by private firms. I have particulars of some 100 abstracting organisations in this country which periodically issue, either in printed or duplicated form, sets of abstracts to their subscribers. Most of these abstracting organisations now combine with this work the functions of an information bureau and this class of service is rapidly extending. The methods of working the services rendered, however, vary widely, and such organisations can be conveniently divided into the following groups :

Libraries, many of which now employ an Intelligence or Information Officer, whose business it is to answer questions on every conceivable subject. To do so it is necessary to know where to find that information rather than to have it in one's head, and as the resources of any ordinary library on any particular subject must be strictly limited, the more successful ones must have a fairly comprehensive card index system of sources of information. The Croydon Public Library used to boast that they had never failed to find the right answer to any question put to them and I believe that the Manchester Library also has a high reputation in this respect. But the information sought for from ordinary libraries is in general of a not very technical nature. The Science Library on the other hand stands in a class by itself and has, in my opinion, far and away the most important stock of literature on all matters pertaining to science and its system of privileged borrowing is of great value—we borrow material (mainly foreign) from it at the rate of several items a week. Next to the Science Library, perhaps, comes the Patent Office Library, whose range of technical journals is wide, but this is a reference library pure and simple.

Academic Bodies and Scientific and Technical Societies which usually publish abstracts of the world literature on their subjects. In general, these institutes do not run an information bureau in the true sense of the word, though in most cases a card index system is kept, from which important articles on any particular subject can be traced, whilst the originals of the articles abstracted can almost always be borrowed from the library by members. The publications of these institutes can also usually be purchased by the general public and consulted at technical libraries.

As typical examples under this heading may be mentioned the Institution of Civil Engineers, the Society of Chemical Industry, the Institution of Electrical Engineers, the Pharmaceutical Society, and the Institute of Metals. Such professional bodies include among their activities the discussion and publication of scientific and technical papers. In some instances they sponsor or financially support various special researches of general interest to their professions, though in general research is not their field.

Industrial Research Associations. These are bodies which are supported by subscription from the member companies, supplemented by Treasury grants. Their activities are controlled by the member companies, Government interests being represented by the Department of Scientific and Industrial Research. There are over twenty such associations in existence, e.g. the British Non-Ferrous Metals Research Association, the Research Association of British Paint, Colour and Varnish Manufacturers, the British Scientific Instrument Research Association, etc. The main object of these research associations is to carry out (usually in their own laboratories) systematic researches on fundamental problems in the industries which they serve. In addition, they now practically all run well-organised and highly efficient information bureaux and include in their bulletins or similar publications comprehensive abstracts of the more important data published throughout the world. These information bureaux are, of course, run mainly for the exclusive benefit of their members, and their bulletins are in general not purchasable by the general public. However, they do also issue some publications which are generally available.

In addition to the industrial research associations mentioned above, attention may be drawn to the various research stations of the Department of Scientific and Industrial Research, such as the Fuel Research Station, the Building Research Station, etc., all of which have excellent information services which are available both to industry and the public at large. They issue various publications and sometimes also abstracts in their particular field.

Trade Associations, formed mainly for the purpose of safeguarding the commercial and political interests of their members. Some of these represent Trade or Industry as a whole, such as the Chambers of Commerce and the Federation of British Industries; whilst others confine their activities to one particular branch of trade or industry, or one particular market, like the British Engineers' Association, the Association of British Chemical Manufacturers, or the Australian Association of British Manufacturers. All the more important of these trade associations issue periodical bulletins or journals, and all run fairly well-organised information services, though these do not in general cover technical matters, but purely commercial, including tariffs and currency regulations in different countries.

Development and Propaganda Bureaux run on behalf of a particular industry, and financed entirely by that industry and having as sole object the increased sale of its products, chiefly by the development of new uses. Typical of this kind are the Copper Development Association, the International Tin Research and Development Council, and the Gas Information Bureau. These all possess excellent intelligence and information bureaux and technical publications, such as those issued by the Tin Research Council, and various other literature. These are, in general, mailed to a selected list of individuals holding responsible positions in consumer firms and are obtainable by anyone genuinely interested on request.

These propaganda and information bureaux are doing excellent work by placing at the disposal of consumers and potential consumers the best available data on the use and working of the material concerned, and their number is on the increase.

Under this heading should, perhaps, be also included the various trade organisations which tell us to "eat more fruit" or that "beer is best," but I have no knowledge as to whether they are prepared to supply enquirers with statistical, medical or other data, showing why fruit or beer is best, and I have not included them in my list of information bureaux.

Intelligence Departments of big industrial concerns, such as Imperial Chemical Industries, Metropolitan-Vickers, The Mond Nickel Company, Ltd., Edgar Allen & Co., and The British Aluminium Co. These intelligence or information departments have in general two distinct but closely interwoven functions. The first is to supply their own research workers, works managers, and departmental heads with the latest information available on all matters connected with their work and on request to investigate any particular subject upon which information is required. This may be called the production side of their activities. The other is to collect and collate information on new uses for the company's products and propaganda material generally and to pass it to the sales, development, and publicity departments respectively. Although the resources of these intelligence departments are intended primarily for the benefit of the company's own and allied organisations, and information asked for by outsiders is normally passed through either development or publicity, it is in practice found difficult to stick to hard-and-fast rules and my organisation, at any rate, supplies on request a great deal of data to research workers and development engineers in most of the aluminium-consuming industries, whilst our two abstract bulletins—*Light Metals Research* and *Light Metals Review*—dealing respectively with the production and consumption sides, now have a fairly wide external circulation. I have been favoured with notes by those responsible for similar organisations in other big concerns and from these it would appear that they are all run on more or less the same general lines, though some go farther than others on the publicity end. Although run primarily for the benefit of the company's or combine's own or allied staffs, their resources are in general available to genuine enquirers, either direct or via the publicity department. In their most highly developed form they act as a central clearing house for data of all kinds of interest to the industry, from the highly scientific, such as Electron Diffraction, to the purely mundane, such as Import Duties.

Miscellaneous. In addition to these main groups, many public and private bodies run intelligence departments principally for the use of their own organisations, but they are usually willing to put their resources at the disposal of a genuine seeker after the truth, particularly if connected with a similar organisation in some other line—a spirit of reciprocation and co-operation permeates all intelligence organisations. The leading news agencies, and some newspapers, run intelligence departments where information on people and places which come into the news can be quickly obtained, and the *Official Index to the Times* (which can be purchased) enables the exact date and details of any event to be rapidly discovered. Some of the big department stores also have information bureaux, that run by Selfridges being perhaps the most extensive. All Government departments also have their own internal intelligence organisations, but these are in general only available to their own staffs.

In conclusion, I should like to thank Miss Ditmas for loaning me the dossier of the ASLIB Abstracts Committee, of which I was a member, and all those who have supplied me with information on the scope and methods of working of their organisations. Space prevents my mentioning them all by name, and if I have taken as typical examples of each of the classes of bureaux mentioned those dealing mainly with technical matters, it is because I am an engineer and am most familiar with the resources of technical information bureaux.

Addendum.—Since writing this paper it has been suggested to me that the particulars which I have collected on the scope and methods of working of the various information bureaux and abstracting organisations would, if tabulated and properly indexed under subjects, be a valuable work of reference to ASLIB members. As a matter of fact I had planned to complete the job by doing this and presenting the result to ASLIB on the understanding that it should be kept up to date. If a sufficient number of members of ASLIB notify a desire to have their own copies, the question of duplication could be considered.

Additional Paper

See also paper communicated by Mr. G. Lightfoot on “The Establishment of an Information Section by the Council of Industrial and Scientific Research, Commonwealth of Australia,” printed on p. 125.

The Central Bureau of Hospital Information.

By R. H. P. ORDE.

A Bureau of Hospital Information has features in common with other bureaux, and there is no need to dwell upon them. It has, however, certain points of interest which may distinguish it from the majority, and it is upon these that I would say a few words.

In the first place, it enjoys advantages. The word "hospital" opens the door whenever it is used and organisations of all kinds, some of them altogether outside the hospital world, are only too ready to help and to answer, if they can, any questions that may be asked.

Among hospitals there are no trade secrets; the experience of each hospital is at the disposal of all, and this spirit of helpfulness appears to be infectious, for hotels, schools, mines, shipyards, all and sundry are only too ready to give any information in their power, once it is realised that it is to help a hospital. During my directorship, I have written thousands of letters, many of them asking for replies that involve a considerable amount of trouble, and I have received only one (a fact, not a mere expression) churlish answer.

Another advantage is that the hospitals provide a large and well-defined body of users. This is a most important point. They form indeed a "laboratory of use"—one by which the findings of a scientific laboratory can be checked. It is true that the observers in this "laboratory of use" are not trained in the art of observation as thoroughly as could be wished. Possibly the reason is that they have not yet fully realised that progress and their own advantage depend largely upon the collection of data which they themselves alone can supply. Moreover, they have not always been taken into confidence and allowed to know the use to which the information, for which they have been asked, will be put. Nor again do committees of management, for whom they work, always realise the extent to which sound administration depends upon measurement and observation of fact, and supply their administrative officers with the meters and equipment necessary for accurate observation.

It is pretty clear that if a product is to be tested and its difficulties in use ascertained, and if suggestions for its improvement are to be made, the producer and the user of the product must be brought into effective contact. As an example of what I mean, I would put forward a memorandum on Panel Heating which has recently been issued. The origin of this memorandum is as follows; in order to obtain data concerning the advantages of panel heating for hospital purposes, enquiries were made from a number of institutions where it was in use and a memorandum based upon their replies was produced. One of these fell into the hands of the Chairman of the Panel Warming Association and, as it contained certain observations adverse to panel heating, he came to see me. He asked me to tell him the names of those institutions in which panel heating had been found defective. I told him on the understanding that he would let me have any

explanations which investigation might reveal. He did so, and I learnt the reasons for these failures which had been recorded in the memorandum. He naturally said that before adverse criticism was published the producer should at least have the chance of an explanation. This appeared to be eminently reasonable. I told him the only object I had in view was to ascertain the truth, so far as it could be ascertained, and I suggested to him, that for this purpose, his Association and the Bureau might join hands. He agreed, and together we drew up a series of questions designed to supply the producer with all the technical information required. Further, the services of an independent trained engineer were obtained. A circular was sent out to some forty or fifty users of panel heating, enclosing a copy of the questions and informing them that in due course an engineer would wait upon them; would discuss their answers to the questions, and would also help them wherever there was any technical difficulty in arriving at facts. The engineer was thus able to satisfy himself that the answers given were as closely in accordance with fact as possible. The questionnaire, when filled in, was then submitted back to the user and signed by him as a correct statement of his experience. A summary based on the answers to the questionnaire was then made, and the memorandum on panel heating produced.

There is no reason why this method of bringing the user and producer into effective contact should not be extended. It would appear to be the only possible method by which products can be improved and progress made. It is true that it is one which may possibly put an end to advertisement of the extravagant type. This will be all to the good. There will still be room for advertisement confined to its proper sphere; but mass suggestion by means of propaganda issued at extravagant cost by financially interested parties requires some corrective. A memorandum produced after the fashion of the memorandum on Panel Heating may cost some £50. Its value, however, from the point of view of the producer and of the user is incomparably greater than those expensively got-up illustrated brochures that must cost large sums of money and which, so far as persons responsible for public buildings and the spending of public money are concerned, cut to-day very little ice indeed.

This type of work is one to which the Government might properly give financial assistance. There is everything to be said in favour of the research laboratories established by Government, such as that at Teddington, to these I would like to express my gratitude. But I am not sure that the method of granting Government assistance to Research Bureaux established by various trades, while perfectly proper in its way, provides just that kind of assistance which the users require; though, here again, I am bound to acknowledge that I have myself received in the past, and am now receiving, most valuable assistance from these organisations. I think that the users themselves require their own bureau of information. The misfortune is that users are for the most part individuals and therefore difficult to deal with collectively.

Since the Bureau of Hospital Information was established more than 120 memoranda, mainly of administrative interest, have been published, and while there is still a lingering reluctance on the part of committees of management and their chief executive officers to the keeping of adequate records, the value of collective experience based upon records

is now becoming pretty generally realised. It is less rare than formerly to receive a letter from an administrator asking a question the answer to which entirely depends upon data which he and his fellow administrators alone could supply from records if they would only keep them and communicate them to the Bureau.

There is one more point to which reference may be made. Bureaux of information have generally, I think, owed their origin to the desire of a number of interested bodies. Sometimes a single body has been large enough to feel the need for one for its own special work. But in the case of the Voluntary Hospitals this process was reversed. They number approximately 1,000 and are intensely individualistic. Not many years ago I called upon the chief administrative officer of a large hospital, and had difficulty in persuading him of the advantages of a bureau of information. He told me that when he had a problem to solve he preferred to visit two or three places on his own and come to his own conclusions. I failed to make any impression on him when I told him that he would be none the worse off if he had at his disposal in addition the experience of a hundred or more hospitals, some of which might have solved the problem on which he was engaged.

The Bureau of Hospital Information has therefore had to perform a missionary task and to persuade hospitals that questionnaires were not sent out for its own private benefit; that by its help the repetition of mistakes, many of them costly, might be prevented and the experience of one made known for the benefit of 999. This phase, however, I am glad to say, is now over, and the Bureau is used to the fullest possible extent, questionnaires being often answered by return of post. Indeed, the Bureau has acted as a force in the direction of bringing about a measure of joint action among voluntary hospitals. It is possible that the dissemination of accurate data based upon a wide field of information provides the most healthy form of central control and possibly the only form that voluntary effort will tolerate. An educated public will not support voluntary effort so soon as it finds that its actions are in direct opposition to general experience made public knowledge by an efficient bureau of information.

The aims of the Bureau may be summarised as follows :

1. To act as a clearing house of information in order that the experience of all may be at the service of each.
2. To undertake enquiries with the object of obtaining facts for those responsible for guiding hospital policy.
3. To collect and summarise data concerning all matters of administrative interest to those engaged in hospital management.
4. To establish a library where books, pamphlets, and diagrams dealing with matters of hospital administration, construction, and equipment may be consulted.
5. To publish annually a *Hospitals Year-Book* containing a directory of hospitals in Great Britain, together with a report giving particulars of work done, finances, etc.

It is frequently necessary to issue questionnaires with a view to obtaining information of a special character. Sometimes these are sent to all hospitals and sometimes to a selected few, but in all cases the results of the enquiry are communicated to those who have supplied the information and when the information gathered is of general interest it is published in the form of memoranda.

Questions of a legal character are numerous, and the Bureau has the advantage of the constant and ready help of a barrister-at-law who places his services at its disposal gratuitously.

Visits are paid to hospitals at the request of Boards of Management in connection with questions of administration.

Sometimes it is more convenient and helpful to an enquirer to collect information in special files than to prepare memoranda. Dossiers have been prepared containing information on a number of subjects from a variety of angles. These special files are sent out on loan on request.

A Library of Plans is kept which are available to those contemplating building hospitals or making extensions.

The Bureau is also responsible for the publication of a year-book which incorporates statistics of the work and finances of the voluntary hospitals. The year-book also contains a good deal of information regarding the municipal hospitals which the public authorities are kind enough to supply.

Every day numerous enquiries are received by telephone and by letter ; and much information is given to secretaries of hospitals and to members of Committees of Management and of the public generally, who pay personal visits to the Bureau.

Information Services in the Building Industry.

By JAMES K. WINSER.

The services required of a centralised information bureau such as ASLIB, which covers the whole field of knowledge, may be expected to differ from those required of an organisation connected with a single trade or group of users. The wider the field covered, the more the information given must be limited to the indication of sources—the narrower the field, the more actual information of a factual nature should be given.

The building industry, owing to its peculiarly loose structure and wide ramifications, requires both types of information service, and it is perhaps because it is unique in this respect that I have been asked to contribute these notes. Our principal user of "Information" is probably the architect, who in a sense is the key executive of the industry, and I shall for the sake of simplicity confine my remarks to his problem, but it must be realised that the quantity surveyor, the manufacturer, the contractor, and the craftsman are all potential users.

Information required may be grouped into three main sections :

1. As to materials, sources of supply, costs, methods of construction—the technique of building generally ;
2. As to planning and aesthetics—the technique of architecture ; and
3. As to commercial matters, law and procedure.

These divisions are arbitrary, and of limited use except to show the unusually wide field covered. The architect designs and controls the work of more than twenty trades, and has to have an expert knowledge of each. He provides accommodation for every type of industry and every social purpose, and must have detailed knowledge of the use to which his buildings will be put. He is responsible for the contract and must have a wide knowledge of law, commercial practice, and costs. Above all, he is required to be a designer—an artist. So stated, his need for independent and rapidly available sources to which he can turn for information is clear.

A further, albeit temporary, difficulty arises from the present state of technical development of the industry. All the older trades were once based upon craftsmanship and tradition. The industrial revolution led to changes, to factory groupings, and to the development of scientific control, so that as the importance of tradition and pure craftsmanship weakened there grew up to take its place an applied science. In the building industry the change has come relatively late, much of the tradition and craftsmanship has been lost before the science has been developed, let alone applied, and inevitably the results of research tend to be applied wrongly, slowly, or not at all. Recruitment of the architect is still mainly from those who have had a classical or at any rate no specialised scientific education—very few have taken a degree in science. If this educational background is compared with that of those who control technique, and production

in other major industries, something of the difficulty of building up and organising acceptance of the necessary applied scientific basis for the industry will be seen. It is the information organisations which must in the main carry out this work, for post-graduate and refresher educational schemes do not exist. To do it they must provide what amounts to a translation service, for the average scientist is as incapable of appreciating the outlook, problems, and jargon of the architect as the architect is of the work of the scientist.

This change of basis in what is necessarily a complex industry, together with the ever-increasing speed at which work must be completed, means that the purely directory type of service, designed to put the architect in touch with the source of information, is of only limited help. He needs the actual information itself, the abstract rather than the bibliography. It must, however, always be palatable, if possible, diagrammatic in form and very definite. A carefully hedged reply, indicating several alternatives, is unpopular. The work is further complicated by the fact that the architect commonly requires comparative information as to proprietary materials and systems of construction. Such information may easily be actionable in law as slander of goods, however true it may be, and so requires very careful handling.

It follows that the staffing of such information services is by no means easy—filing clerks and record officers alone are of little help, and a very high degree of technical knowledge on the part of the majority of the staff is essential. Furthermore, rates of pay and methods of financing must be so arranged as to ensure complete independence from direct and indirect control by proprietary interests.

To list the almost endless organisations of potential use to the architect is not possible here, but some of the developments arising directly from the conditions outlined should be recorded. The most important is, of course, the Building Research Station at Watford, financed largely by Government money through the D.S.I.R. Responsible for practically all the current scientific research into building materials and technique, much of its activity is now devoted to dealing with daily technical enquiries. No other research station has to give so much time to purely "informational services," because no other station is dealing with an industry in a similar stage of transition. Only slightly less important is the Forest Products Research Station, and in practice all the research departments organised under the D.S.I.R. deal at times with building industry problems.

The specialised library organisation in the industry is perhaps not exceptional, indeed in proportion to the turnover of the industry it is probably less extensive than that available in some smaller trades, but the services required of and provided by the librarians are more varied than in any other trade.

Information services are unusually widely developed and over 175 organisations exist, which deal with subjects of interest to the industry. The Building Centre idea—a permanent trade exhibition and technical information service now operating in many countries—is apparently peculiar to it. Similarly, the information organisations dealing with single materials, such as copper, lead, timber, clay, zinc, or cork, are of interest. They deal, of course, with other than building trade

outlets for the material concerned, but one of their main intentions has always been to serve the building industry.

Owing to the scope of the industry the class of technical paper is of exceptional importance—there are some 280 periodicals published regularly which from time to time contain matter of importance to the architect, apart altogether from foreign journals. Obviously no architect can hope to peruse even a small percentage of these, and here is one of the great gaps in the existing organisation—there is no adequate abstracting service. Purely scientific matter relating to building materials is fully covered in *Building Science Abstracts*, but the publication is not attractive to or widely used by the average architect. The architectural journals are abstracted somewhat spasmodically by one or two professional papers, but the great mass of material is not touched. Any successful extension of these services will have to develop a specialised technique to make the matter attractive to the architect.

There is also need to prevent overlapping and improve the quality of both the law reporting and “contracts open” services. A minor point already receiving attention is inter-library co-operation to prevent duplication of subscriptions to the less important foreign journals so that a wider selection may be available in the country as a whole. The value of this is limited, however, by the translation difficulty, since very few of our library users have a working knowledge of foreign technical languages.

Perhaps the greatest need is for some form of centralised headquarters to direct enquiries to the most suitable source of information, and to work towards the elimination of the gaps in the informational and research services as they now exist. There are possible precedents for such a body which would be initiatory rather than executive in character and would, therefore, not be expensive to operate.

To give even a brief picture of the information services in one of the largest industries in the country in the space available has proved an impossible task, and I must apologise for the shortcomings of this paper. It may, however, suffice to show the potential importance in one industry of the type of work on which most of us here are engaged.

American Practice in Information Service.

BY ROSE L. VORMELKER.

When a business man in America faces a problem on which he needs information, he has a host of sources at his command. He may seek it in his public library, his own research department or library, his trade association, his Government—federal, state, or city—his trade papers, his chamber of commerce, a collegiate school of business or bureau of business research, one or more of the quasi-government agencies as the Board of Governors of the Federal Reserve System or the Securities and Exchange Commission. These by no means exhaust his resources. He still may expect to find his answer in reports issued by his bank, his newspaper, his advertising agency, his counsel, his broker, one of the endowed foundations for research as the Brookings Institution or the National Bureau for Economic Research, a private corporation that may have made studies of similar problems, or in some of the trade literature in the form of catalogs, instruction books, and house organs issued by manufacturers. If these have not solved his problem he may still consult a commercial information service as Prentice-Hall, Inc., Moody's Investors Service, Anderson's Business Comparisons, Standard Statistics Co., Dartnell Corporation Service, the magazine indices, abstract services, an individual expert, his university professor, a fellow club member, or a fraternity brother.

Although there is a great deal of duplication in these sources, each makes its contribution to American practice in information services. Many are available for the asking, others may be purchased for a modest amount, while still others require sizable fees. Unfortunately the larger fee does not always guarantee a more important contribution to the information needed than do lesser ones.

"The story has been told of a New York business man who called in a well-known counsellor to advise with him in connection with a certain perplexing problem in his business.

"Three days later this business man received from the 'expert' a lengthy report outlining how another company (name not mentioned) had worked out a similar problem. Accompanying the report was a bill for a sum in four figures.

"The recommendation was just what was needed, and a check was mailed promptly and cheerfully.

"It was fortunate for this executive's peace of mind that in clearing off his desk at the end of that week, he threw away, without examining it, a certain technical journal of his industry which had lain there for two weeks and which he had been 'too busy' to read; for in that journal was the complete story upon which the expert's report was based. The only difference was that it was written more briefly and simply, and the company name was given so that he would have been in a position to get further details if he had wanted to follow it down."*

Library Information Service. If the business man has his own business

* From "Time Out for Progress," by Robert R. Updegraff. This appeared in the *Magazine of Business* for May, 1929.

librarian it is to be expected that he or she will be able to produce the fact or facts needed from as many of the sources previously indicated as have pertinent data. This may be done by supplying a bibliography, making abstracts, writing a report, data for which were culled from numerous sources, by producing the book, trade paper, pamphlet, or report with the relevant item definitely marked, or relaying the specific answer by telephone.

If Mr. Business Man wishes to consult the library himself, he will find a carefully prepared catalog arranged by subject, author, and title, of all the books the library contains. He will also find the many periodical and newspaper indices which will expedite his search in that field. In addition to these "keys to print" he will find many special indexes and files compiled by the individual libraries to meet special needs in a community. For example, the Business Information Bureau of the Cleveland Public Library compiles a list of sources on statistics and maintains many special files of data of local interest that would not be found in the catalog or magazine indexes. More and more he will find a trained staff to assist him in locating the items he can use from the vast amount of material that cannot get adequate indexing in existing library tools.

Federal Government. Let us now consider some of the organizations that originate information. The most expansive of these in America is the Federal Government with its numerous departments and bureaux. While all departments collect and make available information, those of greatest value to business are probably the Department of Commerce, the Department of Agriculture, the Department of Labor, and the Treasury Department.

The various bureaux of the Department of Commerce are responsible for the census figures on production, wages, occupations, population, agriculture, mines and quarries, construction; for data on foreign trade, market studies for numerous commodities; statistics on sales and inventories; on wealth and income; retail distribution figures; standards and specifications, and simplified practice recommendations.

Theoretically this is the department devoted to business interests in the country. It is, however, impossible to allocate the business interests of the country to any one department. The data on prices issued by the Department of Labor is put to greater use by the nation's business executives than by those concerned with social and economic conditions.

The Department of Agriculture logically is concerned with collecting and disseminating information of vital concern to the agricultural population of the United States. Here are compiled forecasts on crops for this country, statistical data on crop yields, acreage, and weather conditions.

That this information is often the starting point for a business problem may be illustrated with the problem of a concern about to market a special ladder for apple picking. The first fact necessary for an intelligent setting of sales quotas was to know the number of apple trees of fruit-bearing age in existence and definite information concerning the location of these trees. These data were readily available through the Department of Agriculture reports to the Cleveland business man who made his request known to the Business Information Bureau of the Cleveland Public Library.

The weather reports were used by a bank to help determine upon what basis a loan to a Southern firm could be made. The Southern firm's ability to pay depended upon the cotton crop. The cotton crop depended upon the boll weevil. It was known that the boll weevil propagates under certain weather conditions! Therefore, a study of weather reports could forecast the cotton crop!

Their importance to those engaged in aviation transportation brings another instance of an information service invaluable to business, even though primarily intended for farmers.

The Bureau of Labor Statistics collects figures on wholesale prices, retail prices, building construction, cost of living, payrolls, and industrial disputes. These are published at regular intervals through printed bulletins and processed releases.

It is significant to note that the index numbers on wholesale prices which have been published by Dun's since 1860 and by Bradstreet's since 1890 have been discontinued by Dun and Bradstreet's. In making the announcement, Willard L. Thorp, Director of Economic Research of Dun & Bradstreet, Inc., stated that the Index Number of Wholesale Commodity Prices, compiled by the Bureau of Labor Statistics, United States Department of Labor, Washington, D.C., has been constructed in accordance with the most recent improvements in technique. Now available weekly, this index has a more representative coverage, and employs weights in closer alignment with the current significance of the commodities involved.

The Treasury Department provides information concerning the nation's financial situation. Income tax returns are used as a barometer for the financial condition of various communities which in turn becomes an important factor in any market study.

While much of the data gathered by the Government is published and the publications listed in the Monthly Catalog of United States Publications, still there is a great deal of unpublished material in the files at Washington. This may be consulted there in some cases and in other cases, special reports will be compiled by the Bureau for a service fee.

Information collected by state governments parallels that of the Federal Government with the exception that the information is usually limited to the situation in the specific state. These data are announced to the public through the Monthly List of State Publications.

City governments have no clearing house for listing publications, although many are indexed in *Public Affairs Information Service*. The various municipal reference libraries are the best sources for data on cities.

Quasi-Government Agencies. These are agencies that have been created by special legislation or executive order but are entities in themselves and not responsible to any one government department.

Among them are the Interstate Commerce Commission, the Securities and Exchange Commission, Board of Governors of the Federal Reserve System, and others. The information provided by them differs from that of government departments in that it frequently covers data never before available in any form. It is given in greater detail and with greater frequency than would be possible for a government agency. For example, the Interstate Commerce Commission collects and publishes detailed figures on operating revenues and expenses of

railroads, statistics on railroad wages, accidents, traffic performance and equipment, and gives these data for specific railroads—not merely general statistics.

Similarly, the Securities and Exchange Commission has detailed data on the financial organization and condition of all firms whose securities are traded on the principal exchanges. This includes even salaries paid to officers. For some of our larger corporations, the material so gathered takes up several feet of shelving space.

The Board of Governors of the Federal Reserve System, formerly the Federal Reserve Board, which has been in existence since 1914, is responsible for information on bank debits, assets and liabilities of member banks, industrial production, department store sales and stocks. The twelve individual Federal Reserve District Banks compile monthly business reviews for their districts. These reviews give an excellent cross section on business conditions throughout the country and are available for the asking.

The Hearings before numerous congressional investigating committees are bringing to the front pages of our newspapers actual data concerning the inner workings of such projects as the Tennessee Valley Authority and of the strikes initiated by the Committee for Industrial Organization which could otherwise be gathered only by hearsay and surmise.

Trade, Technical and Professional Associations. A recent survey* brought to light the existence of sixty-eight distinct activities of trade associations for their members. These range from abstract services to cooperative warehousing.

Of the ten activities most common to the various types of associations, services relating to information ranked high in each type. For some there is a legislative service to keep members informed by means of bulletins and conferences of legislation affecting them. In some cases the trade association directs an official protest against pending legislation that will be detrimental to the industry. In other cases it supplies information interpreting and giving suggestions for complying with new legislation. The Social Security Act and the Price Discrimination Act are examples of legislation that busied trade associations in the latter respect.

Other information services listed in the survey were: abstract service—supplying members with abstracts of articles relating to their industry; library service—maintaining a library at headquarters for use of members; statistical service—compiling and relaying to members combined statistics of their industry; bibliography service; a clipping service; a photostat service; and the all-general term—information service.

Some trade associations limit their activities strictly to members, while others, conscious of the importance to industry of public confidence and of the interrelation of industry, publish many of their findings for public consumption. For example, statistics on manufactured rubber goods by company are closely held by the Rubber Manufacturers of America, as are also the company data by the Automobile Manufacturers' Association. On the other hand, the National Machine Tool Builders' Association gives to the public press its monthly index of machine-tool orders, which has become an

* Chamber of Commerce of the United States, *Trade Association Activities*, 1938.

important barometer for other industries. The Automobile Manufacturers' Association is issuing to the public at large a monthly bulletin "aimed to promote better understanding of the problems of this industry and of constant improvement in design, efficiency, price reduction, and labor relations." This includes also much needed data on production and employment in the automobile industry. In this respect it resembles the invaluable statistical data issued by the American Iron and Steel Institute.

Chambers of Commerce. These organizations of business men in a specific community are concerned primarily with developing that community. Their activities may consist of a study of local business conditions and opportunities, the results of which are used to encourage new industries to come to the city; to develop or lend their moral support to civic adventures; and, in general, to make the city known as a good place in which to live, work, and play. For this it is necessary to have certain factual data—part of which the staff must collect from the chamber membership and part of which may be secured by rearrangement of existing data from other organizations.

In Cleveland, Ohio, the Chamber of Commerce statistician is responsible for figures on employment in selected industries in the City of Cleveland. He collects from other agencies and publishes in the official publication of the Chamber, figures on building construction in Cleveland, transactions on the Cleveland Stock Exchange, index of bank debits in Cleveland and other pertinent data. Information is kept on file concerning products made and sold in Cleveland and new incorporations within the city.

These activities may be found duplicated in other cities by their respective chambers of commerce. In some cities the information service supplied to the public, and to members by the chamber of commerce, is provided cooperatively by the Chamber and the public library. This is true in Hartford, Connecticut, and in Providence, Rhode Island, where the business branches of the public libraries are in the chamber of commerce buildings. In other cases the Chamber itself has a library and, indeed, the first business library in the United States of which there is any record is that of the Chamber of Commerce of the State of New York, which was organized in 1833.

Collegiate Schools of Business and Bureaux of Business Research. The first collegiate school of business to be established in the United States was the Wharton School of Finance and Economy, later known as the Wharton School of Finance and Commerce, at the University of Pennsylvania, founded in 1881.* It was alone in the field until 1898, when the second and third collegiate schools of business made their appearance at the University of Chicago and at the University of California, respectively. According to L. C. Marshall, by 1925 a total of 117 colleges and universities had developed a more or less definite set up for instruction in the field of business.† I mention these facts only to show how relatively recent is the movement to provide collegiate training for those planning careers in business, which President Lowell of Harvard University described as the "oldest of the arts, but the newest of the professions."‡

* *The Collegiate School of Business*, edited by L. C. Marshall. 1928.

† *University Education for Business*, by J. H. S. Bossard and J. F. Dewhurst. 1931. pp. 252-3.

‡ *Development of Harvard University*, edited by S. E. Morison. 1930. p. 548.

Identified with universities and collegiate schools of business and growing with great rapidity are the Bureaux of Business Research. These bureaux have specially trained research staffs and undertake studies that have specific value to the industries or to the business interests of the communities in which they are located. The value of their work is dependent upon the cooperation they can get from business concerns. Trade associations or other groups of business men are constantly working with such bureaux in their comparative studies on operating expenses and the like and indeed many studies are made at their request and financed by them.* The first such bureau was organized at the Harvard University Graduate School of Business Research, in 1911. Its first study concerned operating expenses for shoe retailers. This meant collecting from the merchants figures on sales, inventories, merchandise costs, wages and salaries, rents, advertising, deliveries, and all the other items needed for "doing business." Later they covered other fields—the jewelry trade, automobile industry, grocery trade, hardware business, and so on.

For several years the National Retail Dry Goods Association has financed, at the Bureau of Business Research at Harvard University, an annual survey on operating expenses of department stores and specialty shops. Results of the special studies of these bureaux are published in separate bulletins and reports. The few titles which follow indicate the scope :

Cost of doing Business—Survey of Petroleum Retailers in Denver. Bureau of Business and Government Research—University of Colorado, in cooperation with Denver Association of Petroleum Retailers, Boulder, Colorado.

Economics of the Iron and Steel Industry. Bureau of Business Research—University of Pittsburgh, Pennsylvania. Financed through grants from Brookings Institution and the Falk Foundation.

Michigan Bank Failures. Bureau of Business Research—University of Michigan, Ann Arbor, Michigan.

A Study of Labor Turnover in Fourteen Ohio Business Concerns in Relation to the Cost of a Hypothetical System of Unemployment Benefits. Bureau of Business Research—Ohio State University.

Current statistical data or articles discussing current economic conditions are presented through such periodicals as :

Bulletin of Business Research—Published by the Bureau of Business Research, The Ohio State University, Columbus, Ohio.

Indiana Business Review—Published by Bureau of Business Research, Indiana University, Bloomington, Indiana.

Miami Business Review—Published by School of Business Administration, Miami University, Oxford, Ohio.

Pittsburgh Business Review—Published by the Bureau of Business Research, University of Pittsburgh, Pittsburg, Pa.

Toledo Business Review—Published by Bureau of Business Research, University of Toledo, Toledo, Ohio.

Commercial, Economic, and Financial Services. These are "convenience" goods and refer to the type of information offered for sale by individuals or companies who make a business of collecting, compiling, and publishing data and statistics covering a given field or intended for a

* *Education for Business Management*, by J. A. Bowie. 1930. p. 109.

specific type of client, as, for example, a banker, broker, or industrialist ; and kept up to date by regularly revised and supplemental data.

Services are of two main types—factual, and opinionative or interpretive. Some are a combination of both types. They may include data from the entire list of sources mentioned in the opening paragraph. They are intended to relieve the busy executive of the necessity of going through volumes of print to find that part which he may need at the moment for intelligent investment of funds, for new business campaigns, or for market analyses.

Factual services in the financial field are those published by Moody's Investors' Service, Poor's, Standard Statistics Co., and Fitch Investors' Service. These give analyses of industrial corporations, banks, insurance companies, railroads, public utilities, and governments, covering a brief history of each, comparative income accounts, detailed descriptions of the corporation's stocks and bonds, and names of its officers and directors.

From the current economic services our Business Man can get through weekly bulletins such data as :

(1) Several weekly business indicators such as those on steel output, electricity output, coal output, car loadings, business failures, checks cashed, commodity price index. (Alexander Hamilton Institute—Business Conditions Service.)

(2) An index of business activity for the current week—and on the same line across the page, the business average index for 1, 2, 3, 4, and 6 weeks ago ; for 2, 3, 6, 9, and 12 months ago ; and for 1, 2, 3, 4, and 5 years ago. (Anderson's Business Comparison.)

(3) A list of companies which have had strikes during the previous month, the number of employees involved, and how the strikes were settled. (Babson's Reports.)

(4) Life insurance sales, bank debits, payrolls and building for all states and for 128 cities. (Brookmire Corporation—Brookmire Bulletins.)

(5) Actual prices of commodities. (Brookmire Corporation—Brookmire Bulletins, also Babson's Commodity Price Bulletin and McGill's Commodity Price Indices.)

(6) Outlook for economic and business developments. (Brookmire Corporation—Brookmire Bulletins.)

(7) Briefs on supply and demand for various commodities. (Economic Statistics.)

(8) Index of residential rents for specified cities. (Real Estate Analyst.)

(9) Sales and credit forecast which is a colored map of the United States showing the value of business for the current month and compared with a year ago. (Babson's Reports.)

(10) Recommendations for securities purchases. (Moody's, Brookmire, Babson, Alexander Hamilton, Standard Statistics, and others.)

The *Handbook of Commercial and Financial Services* and its supplement, published by the Special Libraries Association in 1931 and 1932, listed 262 such services. They vary in price from a nominal sum to \$500 a year, and in some cases much higher amounts. A new edition of this handbook is announced for fall publication in 1938.

Because of the great number of services on the market, many business men welcome two "services on services." One is the United

Business Service which contains as a regular feature, a digest of eight services on general business, money conditions, the stock market, commodity prices, production, domestic trade, foreign affairs, and a combined "United Opinion." The other is Business Conditions and Forecasts prepared monthly by the American Management Association. This digests seven services on the following topics : General business outlook, money and credit, security market, production distribution, building, agriculture, commodity prices, labor and wages, foreign trade and conditions.

Research Foundations. Although endowed foundations for research in the field of business have not reached the heights attained for research in the fields of science and medicine, still a beginning has been made.

Due to the urgency of the moment, many decisions in America's business world have been based on snap judgments or on the information at hand at the moment. The idea of applying years of research to a business or economic problem is a relatively recent development and is due no doubt to the constant repetition of these "urgencies."

However, it is not so uncommon as it once was to hear executives say : "Well, what are the facts on such and such a problem ; do we really know how much unemployment, if any, is due to increased mechanization in industry ; is this a topic that might well be studied by the staff of a research foundation which is qualified to make an unbiased investigation and present the results to us ?"

The Brookings Institution, the National Bureau for Economic Research, the Food Research Institute, the Twentieth Century Fund, and to a certain extent the National Industrial Conference Board, fall in this class. Broad economic studies are undertaken at the request of the board of directors, an outside organization or the government.

Each has its own research staff and the results of many of their studies are published in book form, periodicals, or in special bulletins.

The Brookings Institution has specialized in studies of government functions. One of its earliest studies resulted in the making of a budget for our federal government. Studies on wealth and income, on production and consumption capacities in the United States are typical topics of research for this foundation.

From the National Bureau of Economic Research have come detailed studies on business cycles ; on production trends, on mechanization in industry, and on prices.

One of the recent studies made under the direction of Frederick R. Macaulay gives the most exhaustive figures on bond prices and bond yields yet made available anywhere.

To the Twentieth Century Fund goes the credit for having conducted research on the stock market and its lack of control that initiated regulatory legislation for trading in securities.

Banks, Brokers, Advertising Agencies, Newspapers, Periodicals. From time to time all of these agencies issue special information reports as part of their regular field of activity.

Many banks publish authoritative and timely periodical reviews of business and economic conditions, written by their economists. These are usually free for the asking, and if studied with intelligence would give all who read them a background of information on which to base sound judgment.

Outstanding in this field are : the *Chase Economic Bulletin*, edited by Benjamin M. Anderson of the Chase National Bank ; the *Business Bulletin of the Cleveland Trust Company*, edited by Leonard P. Ayres ; and *Economic Conditions*, issued by the National City Bank of New York.

Brokers' studies of a number of corporations in a certain group—as, for example, the steel companies, or the rubber companies, or an analysis of any one corporation—add their bit to the sources of information in the field of finance.

Statistical studies and market analyses for a special commodity or community are frequently made available as separate reports issued by advertising agencies, periodicals and newspapers.

A newspaper may find it necessary to have actual figures on hand concerning the size of the market a prospective advertiser would reach were he to place an advertisement in that newspaper.

Recently a group of newspapers made a survey of consumer goods purchased in a number of cities. As a result it is possible to produce factual evidence concerning what make of electric range was the favorite of families in the \$3,000 income class and from what dealer they purchased the largest number ; or what brand of tooth powder college men of 20 years of age preferred ; or to which radio station the "lady of the house" was listening at 5 p.m.

All of the miscellaneous and apparently unrelated items have definite dollar and cents value to the prospective advertiser.

Trade Periodicals and Newspapers. These chroniclers of current events are often the only source of information many business men attempt to watch. They also provide much of the raw material used by commercial services, trade associations, and research agencies for their product.

A study of regular features of periodicals reveals that the *Commercial and Financial Chronicle* is the source for daily high and low prices of listed securities for the past week ; *Dun's Review* has a regional business index for each of twenty-nine districts into which it has divided the United States ; an Index number on construction costs and contracts awarded for building projects, arranged by type of building and by city, will be found every week in *Engineering News-Record*. Keys to these data, as well as to the text matter for many—though by no means all—magazines, are the *Industrial Arts Index*,* *Public Affairs Information Service*,† and in the abstract services and library bulletins issued by trade associations, special libraries, and business departments.

Manufacturers' Trade Literature. There is a volume of material being issued by manufacturers themselves that is the latest word on the subject and also the most authoritative. In trade catalogs we get lists of products, pictures of products, prices of products, specifications of products, texts on the uses of products, texts describing the manufacture of products, instruction books on how to operate certain products.

Individual Expert. The American executive faced with innumerable pressing problems is prone to hope there is an "expert" from whom he may purchase for a price the information needed for a specific problem.

* Published by H. W. Wilson Company, 950, University Avenue, New York City.

† Published by Public Affairs Information Service, 11, West 40th Street, New York City.

In 1936 the Market Research Corporation of America sent a questionnaire to 442 business firms asking how they would proceed for information on industrial relations, public relations, economic research, and market research. On the first and third subjects, "an individual expert" got the greatest number of votes, research foundations and trade associations coming next in line.

The University Professor. A young graduate in an executive position often thinks his college professor would know how to handle this or that situation that seems baffling to him.

Because a number were calling on their professors for help in practical affairs, one professor decided that even the collegiate schools of business were failing to prepare their graduates for business careers so far as acquainting them with sources of business information was concerned. As a result of his investigation, there are, so far as I know, two colleges in the country—Leland-Stanford University in Palo Alto, California and Cleveland College of Western Reserve University in Cleveland, Ohio—that have included in their curriculum a course on Sources of Business Information.

In Conclusion. Facts accumulating with such bewildering rapidity and confusion give impetus to the increasing number of services which aim to sift, sort, and interpret existing information for business use.

The 1938 list of Information Sources for market research* alone gives the following figures :

Federal and semi-federal agencies	..	..	..	..	35
State governments	..	..	..	..	17
Colleges and universities	..	..	..	..	97
Bureaux of business research	..	..	..	..	19
Foundations	..	..	..	..	16
Catalog services	..	..	..	..	18
Commercial organizations :					
Advertising agencies	..	..	..	..	8
Broadcasting systems	..	..	..	..	19
Business services	..	..	..	..	51
Chambers of commerce	..	..	..	..	48
Individual concerns	..	..	..	..	20
Newspapers	..	..	..	..	99
Periodicals	..	..	..	..	143
Trade associations	..	..	..	..	153
TOTAL	..	..	..	..	743

Wise Dr. Johnson furnished the most excellent of truisms for the modern business man's education when he observed : " Knowledge is of two kinds. We know a subject ourselves or we know where we can find information on it."

* *Market Research Sources*, 1938 edition. Published by United States Bureau of Foreign and Domestic Commerce, Washington, D.C.

Summaries of Papers contributed to the Symposium of "The Organisation of Information Services: A Review of Current Practices."

[*Note*: These papers are printed in full in the *Transactions* of the Fourteenth International Conference on Documentation.]

Guides to Information.

By MME. S. BRIET (in French).

Definition of the term "guides to information." Guides may be of many kinds, but of immediate interest are those which touch directly on scientific research in the widest sense of the term.

The author then considers how the three chief types of guides to information are represented in France. In the first place there are the regional and local guides, which merely give the locality of a monument or institution and its hours of opening, etc. Secondly, come those directories which, based on a profession or some specialised activity, give the names and addresses of those concerned and other relevant information. Thirdly, and more important, are those guides which lead one to sources, institutions, and specialised collections. In this category the arts and social sciences are better served in France than the pure and applied sciences. The author gives particulars of a number of these specialised aids to research published in France or elsewhere, and closes with the hope that a directory to sources of specialised information may soon be compiled for that country.

The Dental Documentary Foundation (Brussels).

By EMILE HUET (in English).

The Foundation was created to centralise all possible scientific data on dental activities and to provide an information service. Financial support has been received from the Eastman Foundation, the International Dental Federation, the Société d'Odontologie, etc. Fees for bibliographical searches are collected from enquirers for information. The Foundation is controlled by an honorary Managing Board of those prominent in dental science, is in touch with a large number of specialist collaborators throughout the world, and maintains a staff for keeping records and dealing with enquiries.

The Volpi Centre of Electrolgy (Venice).

By DR. ING. T. LEARDINI (in English).

The Centre has been established for the development of electrical studies in Italy and to promote exchanges of technical information with other countries. It is planned to arrange for wider dissemination abroad of Italian work in the electrotechnical field by means of a

periodical bulletin containing abstracts of all Italian papers, printed in a form suitable for inclusion in card indexes and issued in three editions—English, French, and German. For the use of Italian technologists a classified card index is being formed which will include abstracts of all important electrotechnical papers published throughout the world. A specialist staff is being assembled for compiling the index, making searches to answer technical enquiries and for translation services.

Documentation as practised by the Swiss Federal Railways.

By E. MATHYS (in English).

A centralised library of 22,600 books was organised for the Swiss Federal Railways in 1924 by assembling the material available in the scattered divisions and offices of the companies. Author and classified subject indexes were constructed and later a classified printed subject catalogue was issued to all collaborating offices and stations. Loans of books and periodicals totalled 6,000 in 1936. The collection covers such subjects as law, social science, and medicine, in addition to railway literature and the libraries of other official organisations are also utilised. Periodicals are systematically routed to those interested. A classified card index of more than 200,000 cards has been constructed from the bibliography published by the International Organisation of the Railway Congress since 1885, and has been brought up to date by indexing of selected periodicals. A special card index is maintained giving particulars of all Swiss railway tracks since 1847, as also a card index of illustrations of railway equipment, locomotives, etc. Information service is provided by the library staff.

Practical Documentation.

By DR. A. PREDEEK (in German).

The author critically analyses the functions of workers in the field of documentation, indicating not only the possibilities of the field but also its limitations. The task of documentation is best carried out not by the bibliographic expert or by the technician, but by a combination of both, preferably in one person. As an illustration, a short account is given of the Informationsstelle für Technisches Schrifttum (Information Bureau for Technical Literature) founded in 1932 in the library of the Technische Hochschule at Berlin. This was the first effort made in Germany to establish a large public library for documentation work in science and technology, and to combine engineering knowledge and experience with librarianship. This bureau carries out all the numerous tasks which are set by technical enquirers, such as provision of bibliographies, of abstracts, of translations, photostat copies, etc., while last but not least it provides a training ground for "literatur-ingenieuren."

Documentary Organisation.

By M. E. SCHIPPERS (in English).

While the nineteenth century is generally referred to as the "technical era," the present one might be termed the "age of organisation." Organisers need documentation about everything that is to be organised, about the possible working methods, the consequence of new inventions, etc. Documentation may be considered as the basic science of organisation. Documentation introduces "collective thinking" in which the index system represents the "collective memory." The author discusses documentary organisation, and the systems in use. Existing catalogues of book collections are criticised because owing to the lack of abstractors the titles of books are all that is listed in many cases, leaving the public to find the contents for themselves. The author gives information concerning the "ondo-print-systems A and D." He sets out the problems of the documentalist who has to analyse and reduce to simple standard methods innumerable varieties of the usual complicated "methods." He compares the different methods of indexing information and decides that the U.D.C. appears to be an effective and economical solution. He closes with a review of technical prospects concerning photo-electric apparatus for documentation.

DISCUSSION

The chair was taken by MR. ARTHUR F. RIDLEY, and to the discussion following the papers the following contributions were made :—

MR. EDWARD CARTER referred to the particular difficulties of information collection and distribution in the Building Industry which had already been broached by Mr. Winsor in his paper.

A recent enquiry had revealed that a complete centralised research and information service for the industry would cost about £100,000. Such a proposal had not unnaturally appalled the progressive elements and more or less a deadlock had resulted. The problem was now to consider a scheme on a simpler and smaller basis—a scheme of co-operation rather than co-ordination.

He referred to the difficulties of ensuring that information collection really succeeded in finding the truth, particularly in relation to materials in use about which information can only be sought by enquiry from inexperienced persons or persons who are unable to penetrate the social and psychological issues involved.

MR. CARTER concluded by asking for help from representatives of other countries as to the manner in which they penetrated the obstruction of the laws of libel.

DR. VON FRAUENDORFER referred to Madame Briet's paper and pointed out that guides to information centres on international lines dealing with special subjects were just as important as national information guides covering a more general field. A certain amount of standardisation in the general make-up, in the arrangement of material, and even of the contents of these guides seemed to be possible and useful. The International Institute of Agriculture has issued since 1930 a series of information hand-books on the various branches of agriculture, e.g. lists of research institutions in agricultural engineering, animal husbandry, dairying; lists of educational institutions, and finally, a list of agricultural libraries and documentation centres. These specialised guides of information services on an international basis appeared to be an indispensable supplement to national guides covering a broad range of subjects.

MR. ERIC SIMONS, speaking on Mr. Herbert's paper, referred to a practical scheme for co-operative translation already being carried out effectively by a group of steel firms in Sheffield with the Commercial and Technical section of the local library as the central point. Details of the method of operation were given, and the speaker referred to the principal difficulty as the "crass ignorance" of certain manufacturers of the value of translations. In one instance, a certain firm agreed to join in the cost of a highly technical translation running to 10,000 words, "so long as the cost was not more than 5s. od."

MR. D. AKENHEAD drew attention to the existence in the United Kingdom of ten Imperial Agricultural Bureaux which supply information on different branches of Agriculture. These Bureaux are supported by contributions from the United Kingdom, the Dominions, and the Crown Colonies, for whose benefit they were primarily set up. They are, however, in close touch with research workers throughout the world, from whom they gladly receive both information and requests for information. They are situated at Research Stations specialising in the subject with which they are concerned and hence have expert advisors at their shoulders.

They publish abstracts, technical communications, annotated bibliographies, etc. Their central headquarters is in London at 2, Queen Anne's Gate Buildings, Dartmouth Street, S.W.1.

DR. C. E. P. BROOKS said that the Conference had heard a great deal about the supply of information but little about its receipt. He understood from conversations he had had that in some scientific research departments in which the supply of information was organised it was not always utilised to the fullest extent by the technical staff and this stood in the way of its extension.

Museums and Research : Some Facilities in London.

By E. W. WIGNALL.

In Great Britain to-day public interest in museum work is greater than it has been for many years. New museums are being founded every few weeks ; visitors are more and more numerous, having now reached an annual total of over six million for the National Museums in London alone ; more and more money is being spent on museum work. In particular the educational value of museums is becoming properly appreciated—for example, the London County Council has made special arrangements for school visits, and the London teachers have organized a museum society of their own.

The emphasis is on education, and especially popular education. There is no doubt that this is a most important function of museums. While these are paid for by the general public and visited by the millions, every effort must be made by museum directors to ensure that the ordinary visitor benefits and sees exhibits that are both educational and well displayed. Educational work is, however, only one of the three main purposes that museums exist to serve. The others are, first, conservation, and, secondly, the subject of this paper, research.

Before we consider what facilities museums can provide for the latter, it may be useful to consider briefly the nature of museum work and the extent to which it differs from librarianship. I have mentioned the three-fold division of conservation, research, and education. If education comes first in the mind of the general public, conservation must always rank first with the curator. It is his primary and constant duty to see that his specimens are properly housed, preserved, and recorded. Until material is properly conserved, no effective research or educational work is possible. The past history of English museums contains many warnings : let us, for example, remember that Oxford University once had a dodo.

In the matter of conservation, the museum's problems do not differ so very markedly from those of the library (though librarians who take over control of a local museum may be puzzled to know how to avert decay in a feather cloak, a meteorite, or even a freshly killed bird).

As soon as one comes to research, to the study of the collections, there is a very pronounced difference. The librarian's commodity is digested knowledge—even though some of it may not be too well digested. The museum official deals, on the other hand, with the material of knowledge. Specimens of moths are received from South America, or of flints from Sussex, or of plants from Tibet, or of scarabs from Egypt. All that is known is where and how they were found. They are registered, and, if necessary, treated or mounted ; this is the first stage. Next, they are the subject of study, of research work by the members of the museum staff. They are compared with descriptions in the literature, and with similar material in the museum (and perhaps elsewhere), and some of the specimens may be found to be either completely new to science or new to the locality where they were found. Knowledge concerning them is now an idea in the mind

of the curator, and a series of measurements and other data in his note-books.

This is followed as quickly (or as slowly) as the progress of the work and the funds available may permit, by publication in a museum monograph, a book, or a journal; meanwhile, the material may or may not be suitable for display in the exhibition galleries of the museums, with descriptive labels; in any event, it is preserved (and here we come back to the primary function, of conservation), and labelled, and serves as material with which new objects may be compared.

After the work has been published, it goes, if it is sufficiently important or fashionable, through all the stages of new knowledge. It appears (with the usual percentage of error) in the abstracts, the bibliographies, the *Handbuch*, and perhaps even in the text-book. It is now information in the Bureau. The knowledge has been twice digested; or, if you prefer, twice baked into a *Zwieback* for the children.

This may seem all very obvious, but its implications are not fully appreciated. Museums receive a very great number of comparatively trivial inquiries that could be answered by reference to the literature: very often the museum's own publications. It is here that very great service can be given to the student by the library and the information bureau. The museum itself should not be regarded as such a bureau in the ordinary sense. It is wasteful for busy specialists in the museums to be constantly interrupted by questions that could be answered from common works of reference. In some American museums it is the custom to refer inquirers first to the museum library; only if the library staff cannot put them in touch with information available in print are they referred to the specialist departments. I shall have more to say later on the general question of museums and casual inquiries; also on museum libraries and museum publications.

In the field of research, the most continuous and important studies are those conducted by the museum officers themselves. I have already referred to the question of identifying individual material. Often this is a prolonged and difficult task, particularly when there is a large amount of material from some expedition (in the case of natural history) or from some excavation (in the case of archæology). Again, the whole state of our knowledge of various animal and plant groups is periodically revised at the museums; while in the art galleries work on the various schools of painting is of a comparable nature. This is fundamental research, by which the museums have rendered a prodigious service towards the advancement of knowledge. It should never be forgotten when the value of museums is being assessed.

In addition to work originated in their own departments, museum officers carry out a great number of investigations for Government departments, for universities, and for scientific institutions of different kinds all over the world.

Facilities provided in museums for those who are not on their staff may be either comparatively casual or may be spread over a long period. To take the latter first, every National museum in London welcomes properly qualified students from outside, and is glad to provide them with such facilities as are possible. These will, however, depend on the amount of space there is for outside workers, and the extent to which the latter make demands on the time of the museum staff.

Several of the museums have fully equipped students' departments. The Print Room at the British Museum has, for example, a very fine Students' Room, in which the visitor can make a close and detailed study of Museum's collections in this field. There are Students' Rooms in the Departments of Manuscripts and of Egyptian and Assyrian Antiquities at the British Museum, but in most of the other departments at Bloomsbury it is necessary to find room for students in the workrooms which are also used by the Museum officers themselves. Full particulars of the conditions on which students can be received can be obtained direct from the Museum.

Again, in the Natural History Museum at South Kensington, the Department of Geology—to take one example—has not only a Students' Room, but also a workroom in which visiting scholars are able to study either their own material or the Museum collections. In the Department of Zoology, the Bird Room and the Mammal Room are constantly welcoming visiting scientists, and the same is indeed true of every department of the Museum.

The new Geological Museum is in the fortunate position of having more space than most, and it has accommodation in its top gallery for about twenty workers, who have access both to the collections of British rocks and fossils, and to the records and maps of the Geological Survey. At the Victoria & Albert Museum, again, students are welcome, and the same may be said of all the National museums.

At each museum it is, of course, important that the student should have had a sound training, and should know quite clearly what it is that he wishes to study; the museums cannot undertake training that should be obtained elsewhere.

Two further points may here be mentioned. The first relates to museum buildings. When our older museums were built, provision was made for exhibition only, and it was not realised that ample space was also needed for reserves, study collections, and students' rooms. Many of the difficulties with which museum officers and students are now faced spring from this cause. In any new museum, small or large, it is of the greatest importance that adequate study rooms should be available.

The second concerns acknowledgment. Already the museums do a great deal in helping research workers and expect no reward. Their officials may, however, be a little saddened to find that some students for whom they have provided a great deal of information incorporate all this in published papers with little or no acknowledgment or thanks. It would be gracious if those who receive any considerable help from the museums would give the latter due credit.

With regard to casual inquiries which do not involve any prolonged period of work at the museum, the student will find that museum officers are always willing to be of help. The Keeper of one of the National Museum departments once told me he wished students were not so shy of ringing the bell on the gallery marked "inquiries." On the other hand, I would repeat the remark made early in the paper that museum officials should not be expected to save students from doing a little simple work of their own in the Library. At some of the larger museums it would probably be a help both to the visitors and to the museum staff if in each department some one could be assigned to

answer general inquiries, by which at present specialists may often be unnecessarily disturbed.

Those who desire to make the most effective use of museums as sources of information should, of course, become familiar with the scope of the museums and of their collections. As some little aid towards this, I have drafted a brief subject list of museums in London, which is appended to this paper. This was based on material collected in the office of the Museums Association, and I may here mention that although the latter exists primarily for the benefit of its own members, it is always prepared to assist inquirers with information on the scope of various museums, and on the facilities which these can provide.

I now propose to say something of museum libraries and museum publications, both of which are research facilities of very great importance. There is no need to discuss the facilities offered by the British Museum Reading Room. To the museologist it may be a colossal misfortune, eating up money and space that could so well be employed by the museum departments proper; but to the research worker it needs no advertisement. Again, the Science Library, at the Science Museum, is well known to students. Dr. Bradford, who has recently retired from the Keepership of the Library, has earned it a world-wide reputation in the field of decimal classification. It is particularly noticeable for its fine collection of periodicals, and for its admirable bibliographies. And it lends books.

The Art Library at the Victoria & Albert Museum, and the Libraries of the British Museum (Natural History) and of the Geological Museum, are all of outstanding importance and very well known to research workers.

The Library of the Imperial War Museum, Lambeth Road, provides not only a most extensive collection of books on the Great War, but also photographs and cinema films that are constantly being consulted by historians. Reference must also be made to the libraries of the National Maritime Museum, of the Horniman Museum (principally ethnology), of the London Museum (archæology), of Sir John Soane's Museum (architecture, etc.), and of the Museum of the Order of St. John of Jerusalem. The Witt Library of Reproductions, at 32 Portman Square, is also closely related to museum work, containing as it does a collection of nearly half a million photographs and reproductions of pictures and drawings of all Western schools.

Museum publications are, of course, to be found in general libraries, but they are not, I believe, sufficiently well known, and I hope I may, therefore, be forgiven for drawing special attention to them. Unfortunately there is no general catalogue of works published by the museums.* Not long ago I inquired, at the new show-room of H.M. Stationery Office, for a list of National Museum publications, but though the Office acts as agent for a number of museums, it could provide a list for one only—the Science Museum. Librarians should, therefore, apply to the individual museums for their lists.

The lists of catalogues, guide books, and other publications of the British Museum and of the British Museum (Natural History) occupy 44 and 74 octavo pages respectively. They contain works of the greatest importance, which are, of course, familiar to research workers. The

*The booklet recently published by the Stationery Office lists only the cheaper National Museum publications.

value of the lists for reference purposes is increased by the inclusion of works which are, and are clearly stated to be, out of print. The two Museums also issue lists of post cards and reproductions.

The Victoria & Albert Museum issues a rather smaller number of publications, consisting mainly of catalogues and guides in the field of fine and applied art ; a complete list is obtainable from the Director.

The publications of the Science Museum have mostly been issued during the past few years, and may not yet be as widely known as they deserve ; they include not only descriptive catalogues of the collections in the various physical and mechanical sciences, but handbooks on the history and development of the latter. The Geological Survey and Museum publishes annual summaries of progress, reports on the mineral resources of Great Britain, palæontological monographs, and a recently instituted series on British Regional Geology.

The London Museum catalogues are valuable and remarkably cheap handbooks dealing with such subjects as "London in Roman Times," "London and the Saxons," "Parliament and the Premiership," and "Costume." There are, of course, also numerous catalogues and guides issued by the National Gallery, the Tate Gallery, the National Portrait Gallery, and the Wallace Collection, and lists of all these, and of the publications of the Imperial Institute, are obtainable.

Among less familiar London publications I would draw attention to the catalogues of the Museum of the Royal College of Surgeons, to the publications of Sir John Soane's Museum, and to the excellent series of small handbooks on zoology and ethnology published by the Horniman Museum at Forest Hill.

I have thought it worth while to refer at some length to museum libraries and museum publications, since when information can be obtained from these sources it is well that they should first be consulted.

To summarize, the museums can aid research either through their publications and their libraries, or by providing direct help to students. Sometimes this may consist of giving information about the collections, or answering single inquiries. At other times it may extend to the provision of facilities for work over a long period.

Properly qualified students are always welcome, and I know that nothing gives a museum official greater pleasure than an opportunity of discussing his subject and problems with a visiting scholar.

Meanwhile, the work of the museum itself goes on, and contributes its share towards the advancement of the sciences and the arts. In their public galleries, visited each year by millions of people, the museums provide an educational scheme which may be compared with the school and the undergraduate college. In their departments behind the scenes, unknown to the average visitor, research work goes on which is fully comparable with that of the university laboratory or research institution. Thus as a whole they provide a highly organised system—even yet not fully appreciated—for the advancement and dissemination of knowledge.

BRIEF SUBJECT LIST.

The following subject list has been arranged roughly in the order of Dewey, and indicates the principal museum collections under each heading. It does not pretend to be complete, as there are many other

smaller collections in London, especially those associated with various colleges and professional organisations.

Religions : British Museum ; India Museum ; Jewish Museum.

Child Welfare : Carnegie House.

Postal History : Tottenham Museum.

Pure Science and its History, Mathematics, Astronomy, Physics, and Chemistry : The Science Museum.

Geology, Mineralogy, and Palæontology : Natural History and Geological Museums ; Imperial Institute (mineral resources of the Empire).

Prehistoric Archæology : British and London Museums ; Guildhall Museum ; Horniman Museum.

Ethnology : British Museum ; Horniman Museum ; Wellcome Historical Medical Museum.

Botany : Natural History Museum ; Royal Botanic Gardens, Kew ; Imperial Institute.

Zoology (including Entomology) : Natural History Museum ; Zoological Society ; Horniman Museum.

Medicine and its History : Wellcome Historical Medical Museum ; Wellcome Museum of Medical Science ; Museums of the various Medical Schools.

Anatomy and Physiology : Museum of Royal College of Surgeons ; Museums of Medical Schools.

Hygiene and Public Health : Carnegie House ; Parkes Museum ; Institute of Hygiene Museum ; Museum of London School of Hygiene.

Engineering : Science Museum ; Home Office Industrial Museum (safety precautions).

Agriculture : Science Museum ; Royal Botanic Gardens, Kew ; Natural History Museum ; Imperial Institute.

Manufactures : Imperial Institute ; Science Museum.

Building : Geological Museum ; Building Centre.

Fine Arts : National Tate and National Portrait Galleries ; Victoria & Albert Museum ; British Museum (Print Room) ; Wallace Collection ; Iveagh Bequest, Kenwood ; Royal Academy ; Dulwich College Gallery ; Home House (Courtauld Institute) ; National Maritime Museum ; Imperial War Museum ; Guildhall Art Gallery ; Leighton House ; University College Exhibition Room ; Witt Library of Reproductions.

Sculpture : Victoria & Albert and British Museums ; Tate Gallery.

Numismatics : British Museum.

Applied Arts : Victoria & Albert Museum ; British Museum ; Wallace Collection ; Bethnal Green Museum ; London Museum (costume) ; Geffrye Museum (cabinet-making).

Architecture : Victoria & Albert Museum ; Sir John Soane's Museum.

Photography and Cinematography : Science Museum ; Film Institute Library.

Musical Instruments : Victoria & Albert Museum ; Donaldson Museum (Royal College of Music) ; Old Devonshire House.

Theatre : Victoria & Albert Museum ; London Museum.

Geography : British Museum ; Imperial Institute.

Biography: National Portrait Gallery; Imperial War, National Maritime, and Royal United Service Museums; Carlyle's House; Dickens' House; Hogarth's House; Johnson's House; Keats' House; Wesley's House.

Ancient History: British Museum; Victoria & Albert Museum; University College (Egyptology).

Modern History: British Museum; London Museum; Victoria & Albert Museum; Imperial War, National Maritime, and Royal United Service Museums; Imperial Institute; Guildhall Museum; Museum of the Order of St. John of Jerusalem; Tower of London. Also for local history: Tottenham Museum, Walthamstow Museum, and many other smaller museums in or near London.

DISCUSSION

The Chairman, COLONEL E. E. B. MACKINTOSH, in introducing Mr. Wignall, said that the provision of information by means of the visible exhibits in the galleries of museums was an interesting and complementary aspect of an information service, and that he looked forward with pleasure to hearing Mr. Wignall's paper on the subject.

In the ensuing discussion DR. E. E. LOWE expressed his appreciation of Mr. Wignall's extremely useful paper, and said he felt that it was bound to lead to a better and wider use of the facilities for research and for obtaining information provided by our magnificent national museums in London.

He wished, however, to protest mildly against Mr. Wignall's statement that "in the matter of conservation, the museum's problems do not differ so very markedly from those of the library." From lengthy experience in both types of institution he felt that one of the main differences between the work of a museum curator and a librarian lies in this very matter. He (Dr. Lowe) did not wish to imply that the problems of conservation facing the librarian were necessarily less difficult than those facing the curator, but that in a museum the problem of conservation were infinitely more varied and mainly entirely different in character. He mentioned various types of conservation which museums were called upon to undertake in support of his statement.

Dr. Lowe also emphasised the readiness of provincial museums to help enquirers and said a large part of their time was spent in such work. He wished finally to express the great indebtedness of the provincial museums to the national museums and their officers for constant and willing help in many directions.

MR. L. C. WHARTON said that there is one class of enquirers with whom the museums have to deal who are difficult to face. For instance, ikons fall between two or three departments and plainly call in the linguistic departments. Also there is in other museums the enquirer who wants to identify a given shell. If the staff did all this there would be battalions of staff needed. Therefore they readily derange the balance of the exhibition by putting all the shells in a case to which enquirers can be referred—unless it be a rare foreign specimen. So likewise with some other subjects. Internal collaboration in museums is both practical and essential. There are also departmental libraries of much importance.

MR. E. LANCASTER-JONES expressed the opinion that museums, i.e. officers in the national museums, had the duty not merely of conserving exhibits, but of initiating acquisitions; this work of acquisition must be considered an important and exacting function of the officers.

In the national museums, three types of enquiry could be regarded as customary. Specialists who were enquiring in regard to their particular fields were almost invariably referred direct to the museum officer concerned. Research workers of more general character, who were cognisant of the customary methods of research but were not specialists in museum technique, would more properly be referred to the library of the museum, in the first instance, and transferred to the museum officers only if desirable. Members of the general public, who were not equipped for intensive research, could usually be referred to the guide lecturers and technical attendants of the museum.

Museum specimens were documents, in the sense recognised by the Conference on Documentation then assembled at Oxford. All the appropriate methods of

making documents available should be employed in disseminating to the public a knowledge of museum collections. Stereophotography and microphotography might be instanced as methods worthy of greater adoption.

In closing the session, Colonel Mackintosh responded to various requests to say something about the organisation at the Science Museum in connection with information obtainable in the galleries.

He mentioned the handicap caused by shortage of space and the consequent difficulty of a clear and intelligible lay-out of a subject or section. Only one-third of a three-part programme of rebuilding had so far been completed, although in 1912, when the scheme was initiated, it was proposed to complete two-thirds within ten years.

In providing information an essential motto was "to cater for fools"; the simpler-minded thus learnt something and the more intelligent appreciated simplicity. All objects in galleries were clearly labelled and described; technical attendants were present in the galleries to answer enquiries, and technical officers were available for further consultation if required.

The Compilation of Statistics in Trade Associations.

By FREDERICK BROWN, B.Sc.(ECON.).

According to the Chinese, all white men look alike : but I cannot say that all statistics compiled by trade associations look alike. Indeed, they are as different as they could be, and for that reason it is difficult to give a general description of them. In fact, I can best begin by mentioning some of the ways in which they differ.

Some trade associations do not concern themselves at all with statistics ; others print some millions of figures annually. Some publish their statistics ; others guard them jealously, even when they consist in nothing more esoteric than extracts from the official accounts of overseas trade. Some employ statistics almost entirely for propaganda purposes ; others use them to discover unto themselves the truth about things—*rerum cognoscere causas*. Some collect statistics about the economic activities of the community at large ; others concentrate upon the activities of their own members. Some compile simple statistics of enumeration ; others undertake complex statistical studies with a view to establishing causal connections between different phenomena. Some employ statisticians to handle their statistics ; others apparently do not.

The day is rapidly passing when the teacher of statistics can send his students well-equipped into the world of business or affairs by telling them about the Cost of Living Index, the Accounts of Trade, the Unemployment Returns, and a few other official statistics. That day, in fact, has already passed, though not all teachers of statistics realise it. The proliferation of statistics presents a problem, both to the teacher and to the man of business or affairs. Statistics, as we all know, are not ideal bed-time reading. Personally, as a statistician, I prefer Bradshaw any night. In reading statistics, not only does the reader bump up against nasty arithmetical contraptions like weighted averages and standard deviations, but in each subject treated statistically he encounters special terms, special ways of compiling the figures, which, unless he is acquainted with them, either prevent his understanding what he is reading, or (more frequently) lead him into error. Formerly there was a limit to the number of these special terms, these special techniques, which it was necessary to understand. Nearly all of them were dealt with in the second part of most elementary statistical text-books. "Population, Vital Statistics, Prices, Production, Overseas Trade, Unemployment," and a nasty chapter on "National Income and Capital" : when we knew how published figures relating to these matters were compiled, and consequently what they meant, statistics had no terrors for us.

All that is changing—has changed already. Where once the Government and Professor Bowley had a monopoly (or ought I to say "duopoly"?) of statistical production, now we have dozens of organisations, including trade associations, competing for those "scarce means", our time, attention, and understanding. Before we can identify the cause of the sudden increase in the "new registrations

of exempt vehicles " we must know what an " exempt vehicle " is, and at exactly what stage in its history it is " registered " ; only then shall we realise that this increase is connected with our impending personal doom. Before we can profitably analyse the seasonal movement in " basic quantities " of milk, we need to know what is meant by " basic quantities." These terms, however, sound cryptic enough to make us halt ; they invite us either to find out what they mean or to acknowledge our ignorance and lay the statistics aside. Other terms are more dangerous : their meaning seems fairly obvious, but their real meaning is something quite different. Consider, for example, the term " mark-up," as used in department stores. Once we realise that the term is used to measure the difference between the price at which the department store purchases an article and the price at which it sells that article, it seems obvious that when a store buys something for one shilling and sells it for three shillings, the mark-up is two hundred per cent. But that is not so : the percentage is calculated upon the selling price, and in the example I have given the mark-up is only $66\frac{2}{3}$ per cent. This practice is not a method of persuading the customer that the department store is making less profit than it actually is ; department stores do not usually confide in their customers on the subject of mark-ups. It is a practice which is useful in managing the problem of " mark-downs," for department stores do actually mark *down* the prices of goods, when they are shop-soiled, out of fashion, or otherwise unsaleable at the price originally fixed. My point is, that the practice of calculating the percentage mark-up upon the selling price and not upon the purchase-price is one which is definitely misleading to the uninitiated.

More is involved in the difficulty of understanding specialized statistics than the mere definition of terms : we may be equally deceived if we are ignorant of the details of the methods by which the statistics were compiled ; if we are ignorant, for example, of the weights used in calculating an index-number of chemical prices, or of the allocation of different items in an analysis of costs of production. All this throws a greater strain upon the versatility of statisticians, and the time seems to be approaching when there will be specialism within specialism—when there will be not merely statisticians, but milk statisticians, motor statisticians, department store statisticians, and so on, each with a literature as incomprehensible to the other as official statistics are to the plain man in the street.

It is time for me at least to make an attempt to summarize the *kinds* of statistics which trade associations compile and circulate. One of the most common statistical services provided by trade associations to their members is the reproduction, in more or less detail, of those of the official statistics of overseas trade which relate to the raw materials and to the products of the industry concerned. This is the whole extent of the statistical activities of some trade associations ; it represents the most rudimentary stage in the development of trade association statistics. One association, I have been told, circulates overseas trade statistics especially compiled for it by His Majesty's Customs and Excise ; I do not know in what these special compilations consist, but it is possible that they are sub-classifications of imports by kinds of commodity more detailed than those shown in the official returns, such details being useful in that department of the association's

work which consists in promoting the erection of tariffs on the kinds of goods produced by its members.

Another common service of trade associations is the reproduction of market prices of commodities of special interest to members. A slightly more developed stage of statistical activity is the circulation to members of a more or less comprehensive set of statistical time-series, with or without comment, which may serve as a business barometer. The next step in the statistical evolution of trade associations is the calculation of special index-numbers representing the course of prices, unemployment, or business activity, in the industry concerned.

One feature is common to all the statistical activities of trade associations which I so far mentioned : use is made entirely, or almost entirely, of data collected and compiled by Government departments and other outside organisations, and in most cases already published. The service provided by the trade association is that of selection, combination, and in some instances charting and comment. Useful as these services undoubtedly are, especially to the business firm which has no statistical department of its own, it is more interesting to consider the activities of those trade associations which collect and compile data which would not otherwise be available—those trade associations which have broken new ground. It is natural that such data should be collected, in most cases, from the member-firms of the association. In undertaking this work the associations are making a positive contribution to the knowledge, either of the public, or at least of their own members.

The principal kinds of data collected by trade associations from their member-firms are those of production, consumption of raw materials, stocks of raw materials and of products, plant capacity, and operating or production costs. Whereas official statistics of production and of consumption of raw materials are, for many industries, available only at five-year intervals in the Census of Production, or at best, annually in the Reports of the Inquiries under the Import Duties Act, trade associations are able to compile them quarterly or even monthly, and in much greater detail. As far as I know, practically no organisations other than trade associations and similar bodies collect statistics of operating or production costs which are representative of a whole industry.

That statistics of whatever kind should be representative of a whole industry, or of some identifiable section of an industry, is important ; otherwise the statistics may be misleading. It is not necessary that they should be comprehensive, and in many industries the association could not collect comprehensive statistics, because it has not a hundred per cent membership and the non-member firms are not disposed to communicate information. It is sufficient that firms representing a large proportion of the output of the industry should contribute data and that these firms should constitute an unbiased selection of all the firms in the industry. If these conditions are not attained, the statistics will relate merely to the member-firms, which may not be representative of the industry as a whole, and they will be of little if any use as a guide to general trends. The difficulty is that, unless practically all the firms in the industry co-operate, it is impossible to be sure that those firms which contribute no data are not abnormal in some way.

The highest stage of development of statistical activity by trade associations is reached when they undertake, not only the collection and compilation of data which are descriptive of the operations of their member-firms, but research of a statistical nature into special problems affecting the industry, its members, or the community as a whole. It is only possible to give, by way of illustration, one or two examples of this kind of research, since the nature of the problems confronting different industries varies enormously, and the subjects which it might be profitable to study are infinite. My first example is a survey of milk consumption in England and Wales made by the Milk Marketing Board (which I venture to regard for the purpose of this discussion as a kind of trade association) in co-operation with the Agricultural Economics Research Institute. My second example is provided by the detailed surveys of newspaper circulations undertaken by the Institute of Incorporated Practitioners in Advertising and by the Incorporated Society of British Advertisers, and the survey of listening to different radio stations undertaken by a joint committee of those two organisations in collaboration with the Department of Business Administration at the London School of Economics. These surveys, it should be noticed, were purely descriptive in their objectives; they sought to discover facts, not to explain them. Other studies consist in an analysis of the causal factors producing a given set of conditions: these are scientific studies in the true sense of the term. For examples I may mention the survey of the nutritive effects of milk on school-children, in which the Milk Marketing Board did the statistical work; and the inquiry undertaken not long ago by the Retail Distributors' Association, in co-operation with the Bank of England, into the nature and causes of the pronounced fluctuations in retail trade which occur around Easter and Whitsun, and the effect upon these fluctuations of early Easters and late Easters.

This is an appropriate moment to express my gratitude to the many trade associations and organisations of a cognate kind which replied to the enquiries which I addressed to them when I was preparing this paper. Some of these organisations took much trouble in drafting for me a summary of their statistical activities, and sent me most useful specimens of their statistical compilations. It is to their generous co-operation that you owe what there may be of useful information in this paper. I have one regret: of the many which kindly replied to my enquiries, a considerable proportion told me simply that they could not assist me, because their statistics were confidential; some even refused to give a general indication of the nature of their statistical activities.

What can be the reasons for this secretiveness? There are some matters about which most business firms are naturally somewhat secretive; for example, about the volume of their sales, and the details and total of their costs. If firms contribute data of these matters to their trade associations, it is on the understanding that they are treated as strictly confidential. They do not wish their competitors to know the course of their sales, nor their customers the amount of their costs. There may also be a political motive for their secrecy: they may not wish either the working classes or the Government to know their profit margins. But though this desire of business men for secrecy about their affairs is natural, they overlook two facts.

One is that their sales figures and even their cost figures are not, in many cases, so secret as they apparently think. There are means of obtaining a fairly close estimate of the sales of many large firms, and it is precisely those from whom they would most like to conceal these figures who are most advantageously placed for finding them out. The other fact which business men overlook when they insist upon keeping their statistics jealously to themselves, is that there is machinery by which statistical data relating either to an individual firm or to a whole industry can be handled confidentially. This machinery is in existence and is actually employed by some trade associations. Some employ the services of chartered accountants. Others consent to divulge their figures to the Bank of England. Not only chartered accountants and banks, but also Universities, can be trusted to treat information confidentially. Indeed, academic people are peculiarly qualified by their financial independence, by their attitude of mind, and by their remoteness from the actual conduct of business, to be entrusted with confidential information. There is, indeed, a method by which the identity of firms which supply figures is concealed even from those who handle the figures. This method is employed in compiling the statistics of operating costs of department stores which are obtained by the collaboration of the Retail Distributors' Association, the Bank of England, and the Department of Business Administration at the London School of Economics. Each department store sends its cost figures direct to the Bank of England, anonymously except for a code number assigned to it by the Retail Distributors' Association. The significance of this code number is known only to the Association and the firm itself. The Bank tears off this code number and substitutes another code number of its own before forwarding the return to the Department of Business Administration. The Bank maintains a register in which the two code numbers are set side by side, so that if, in the compilation of the figures, any question arises which requires further elucidation by the firm contributing them, a sealed enquiry can be sent, via the Bank and the Association, to the firm. It would require collusion between the Bank and the Retail Distributors' Association for the identity of the firm making a return to be revealed, and such collusion is rightly regarded as impossible.

The business man may say, however, that this is all very well, but ask why should he trouble to send information about his affairs and what he will get in return. What he gets in return is information about his industry as a whole—aggregates and averages in which his own figures are lost and unidentifiable, but which tell him something which his own figures could never tell him. The department store cost figures compiled by the Department of Business Administration tell him how the average department store manages to do its business, what average costs are; and while I would agree that average cost figures do not provide an infallible standard for the individual firm, which may be working under conditions which are far from average, they nevertheless provide a basis for comparison, and any adverse differences should either be satisfactorily explicable in terms of difference in conditions or else be taken as an indication that something is wrong with the firm's own costs. Other kinds of pooled information provide a wider basis for the determination of policy because they do not reflect merely the experience of one firm.

Finally, I venture to mention an altruistic motive which, in my opinion, should move business firms and trade associations to place their statistics, under proper safeguards for their confidential treatment, at the disposal of University and other organisations interested in research. The true foundation of economic and sociological science is the study of facts—of how, in the actual world, things work. Many of those facts are only known to those engaged in economic activities, to business men and trade associations. But they know the facts only partially—only the facts relating to their own firm or their own trade. Moreover, they are bound by the commercial situation to take a comparatively short view; they must think of the profits of their firm this year, next year, or within a fairly short period of years. They are trained by their environment to take what is called a practical point of view.

They cannot afford, or think they cannot afford, to seek practical conclusions by the roundabout method of first establishing a theoretical principle and then deducing the practical conclusion; yet this roundabout method has proved to be, in a multitude of important instances, the only method of reaching the practical conclusion.

University men, on the other hand, can afford to take a long view, to speculate without reference to immediate problems or immediate profit. By so doing they can, as has been proved in many of the sciences, contribute to the welfare of mankind, and also to the profitability of business, in the long run. It seems a pity that valuable factual data should not be put in the hands of those capable of extracting the most information from them.

Fortunately the tendency is more and more in this direction. In this University at Oxford a new college, to be devoted to the study of business problems, has been founded through the generosity of a business man. In my own Department of Business Administration at the London School of Economics we have already acquired some experience in this kind of work in the eight years which have passed since the Department was first constituted; we have been entrusted with such work as the compilation of the operating costs of department stores, which I have already mentioned; with surveys in connection with the fuel and the radio industries; and we have been approached with a view to undertaking further surveys, the nature of which I am not yet in a position to mention. But there is plenty of room for more and more university departments willing to undertake studies of the business world as it actually works, since business men are demanding with increasing frequency and increasing insistence the impartial, detached, scientific collaboration of universities in business studies. I feel sure that trade associations will follow the example of the more progressive among them in placing, in confidence if necessary, their statistical and other information at the disposal of appropriate university departments.

DISCUSSION

The Chairman, MR. B. M. HEADICAR, said that it was somewhat surprising that for statistics of many commodities the Government itself had to depend upon the figures issued in semi-private publications. One had to find details of wool from the Journal of the Bradford Chamber of Commerce; of iron and steel from the Bulletin of the Iron and Steel Institute; of gold and silver from Baring's Bullion Report. Metal markets, the tobacco trade, and other export and import

figures one could mention can only be found at all up to date in circulars and bulletins not procurable in the ordinary way. While many libraries were not able to get these things, one expects to find such periodicals as the *Ministry of Labour Gazette* and the *Board of Trade Journal* in almost every library, but he had found four or five institutions in recent months which did not possess either publication.

MR. B. C. CURLING remarked that the infrequency of the compilation of such important statistics as the Census of Production (taken only at ten-year intervals and becoming completely available to the public so long after the actual census as seriously to reduce the value of the report) partly explained the difficulty mentioned by the last speaker. If the supply of such statistics were called for as frequently as was customary in the U.S.A., firms would make light of the onus and be more likely to respond promptly and accurately, especially when they reaped the benefit of their cooperation by obtaining at short intervals a document capable of live rather than semi-historic interest and value, capable of immediate application to their problems.

MR. S. P. DOBBS questioned how far Government departments realised the possible unreliability of the original returns on which their statistics are based. Apart from the difficulty of terminology, which may result in one person or firm placing a particular article under one heading and another under another, there is the considerable time and trouble involved in preparing certain returns, particularly the Census of Production returns. As an official of a large manufacturing firm he could himself testify to the fact that accurate entries are always difficult and sometimes impossible to make, and he imagined that many firms with smaller staffs than his own would rely largely on guesswork where the figures were not easily available in their accounts.

MR. E. N. SIMONS stated that certain of the statistics compiled by trade associations were not as comprehensive and trustworthy as they should be. For example, in one particular association the figures produced did not show any distinction between the output for sale and the output for their own consumption by the producing firms.

He also pointed out how valuable these statistics would be in connection with market research, and suggested that more might be done by statisticians to ascertain exact results of expenditure on advertising.

MR. B. H. KELLY pointed out that the value of statistics was sometimes in doubt even when there was no question of the accuracy of the data on which they were based. An example of this could be seen in the discussion which appeared in *Nature* during 1935, between Professor R. A. Fisher and Professor Karl Pearson on the value of a particular statistic in testing hypotheses.

Mr. Brown had mentioned the secrecy of many firms and associations about the statistics they compiled. This question was not confined to statistics but covered virtually the whole of the work of ASLIB, and it is to be hoped that something may be done to convince firms that it will, in the long run, be to their own advantage to take the trouble to sort out from the information at their disposal that which they can safely contribute to the general pool. If this were done more widely, all firms would find that they obtained more from the pool than they put into it.

Evaluation of Scientific and Technical Periodicals.

By E. LANCASTER-JONES, B.A.

The problem of determining and expressing the relative value of thousands of scientific and technical periodicals currently published pervades most of the activities of libraries, information bureaux, and abstracting or indexing services which are closely concerned with science and technology.

LIBRARY HOLDINGS.

Libraries acquire, describe, and disseminate information about the periodicals, as do the other services mentioned. Acquisition and conservation are possibly more important functions for libraries, whereas description, in greater or less detail, is the special function of abstracting, and information services. For these latter, conservation may be a deliberately discarded function, and even acquisition may not always take on the aspect of a primary function, since information may be "borrowed" from other sources.

Evaluation may involve complete rejection, or only a differential grading in the attention paid to individual periodicals, or to their contents.

Libraries as such are not concerned with differential grading in describing periodicals; it is an accepted canon of library technique that descriptions (catalogues and lists) shall be impartial, and confined to faithful reproduction of the necessary data taken from the periodicals themselves. Selected reading or reference lists may be prepared in libraries, on the basis of varying limitations; but, speaking generally, librarians are very chary of accepting the responsibility of evaluating periodicals represented in their institutions.

Nevertheless, the holdings of any library must express to some extent the valuation function, in virtue of the inclusion of some and exclusion of other periodicals. It is important, therefore, to appreciate correctly the underlying basis of deliberate exclusion exercised by a library, and to differentiate between deliberate exclusiveness illustrating choice, and forced exclusiveness indicative only of ignorance or inability.

Deliberate selection is exercised in a different degree by different types of library; but there is one practice common to all. The degree of exclusiveness varies with the mode of acquisition, according as the particular periodicals are bought, obtained by exchange, or presented. Since libraries rarely publish the manner of acquisition of each periodical, a mere list of holdings can be a misleading indication of value assigned in virtue of inclusion or exclusion.

Add to this uncertainty the factor of forced exclusiveness, due to ignorance of the existence of certain "obscure" periodicals or inability to acquire them by reason of political factors, uncertainty of transit, etc., and the conclusion is almost inevitable that a library's holdings are only indicative of evaluation if very carefully analysed. Alternatively,

the disturbing factors mentioned above must be eliminated by collating the holdings of groups of libraries, so selected as to "smooth out" the perturbing influences.

The above conclusion presupposes that the objective is to obtain an expression of the relative values assigned by librarians to all scientific and technical periodicals, irrespective of local conditions.

The problem of evaluating periodicals cannot be divorced from that of classifying their contents according to subject. The value of a periodical is necessarily linked up with its relation to some specific subject, and the diffusion of the majority of periodicals over a range of subjects is a peculiar factor which renders their relative ranking, in relation to a specific subject, a far more difficult task than that of grading books.

For every one periodical specifically devoted to a particular subject, there exist a dozen devoted to subjects of broader or cognate scopes, infringing on that one subject. The basis of evaluation in respect of the initial subject must vary according as the periodical belongs to the former specific class, or to the latter much greater cognate group. A library has to adjust its stock to a limited accommodation, and is therefore constrained to exercise a greater degree of selectivity and exclusiveness in regard to these "cognate" periodicals.

In the case of these latter, there arrives a stage when no consideration of initial cost of acquisition can dominate the selection—in short, many periodicals are not worth acquiring even as a gift.

Therefore, whereas a library may include all periodicals specifically within its subject scope, especially if presented, it must exclude the less valuable periodicals belonging to the "cognate scope" group, unless indeed its scope embraces all knowledge.

Consequently, the holdings of a particular library do afford some guidance in regard to evaluating those periodicals of which the scope is only cognate to that of the library. A particular group of such periodicals comprises those concerned with science or technology in general. Specialised libraries will tend to restrict their holdings of this class of periodical to the minimum that they consider to be absolutely essential to the proper discharge of their duties.

Hence it is not difficult to determine, from a single examination of the holdings of a few typical special libraries, which of the readily available periodicals embracing the whole field of science and technology are considered to rank highest, and which are held to be relatively unimportant.

Again, it is not difficult by reference to a library of more general scope, located in the same region, to discover what periodicals of general character are readily available in that region.

In respect of any region, therefore, it is possible by simple investigation to rank the periodicals of a general character. A procedure of a similar kind, using appropriate library holdings, serves to rank regionally accessible periodicals which embrace a considerable, but not the complete, range of scientific and technical subjects.

Coming finally to those periodicals which are limited to a specific subject, we can reverse the previous procedure. The more general libraries will tend to restrict their holdings of specialised periodicals to the higher ranking ones, whilst the specialised libraries acquire as many as possible of the periodicals specific to each of them.

Throughout the above paragraphs, the term "regionally available" has a special significance. In addition to its obvious implication that the periodicals must be obtainable in the region with reasonable facility, it is meant also to imply that they must be adapted to the regional users so far as their languages are concerned. It may be easy to obtain Arabic literature, for example, in England, but few scientific readers could assimilate it with facility, and libraries will thus tend to regard it as of lower rank than its intrinsic worth justifies on general grounds.

To obtain a ranking list of all scientific periodicals irrespective of regional conditions, it would be necessary to examine the holdings of libraries in each of a series of representative regional groups, covering the whole world.

Again, by the term "general scope" is implied general in the scientific and technical sense. The holdings of a public library, for example, are of little guidance in the field of science and technology. University libraries, however, usually cover science and technology sufficiently comprehensively to rank as general in the restricted sense of the term here employed.

Examination on the lines suggested above of the *World List of Scientific Periodicals*, which gives the holdings of many representative libraries in Great Britain, would enable a ranking list of the scientific and technical periodicals available in this region to be compiled. The task would involve the subject and "regional" classification of the individual periodicals; unfortunately such classification is absent from the *World List*. Where similar lists exist for other regions, the same procedure would result in an extension of the lists. Incidentally, it may be remarked that "regions" are related to selectivity very much as "subjects" are. For example, the region of the United States is cognate to that of Great Britain, in virtue of their employment of a common language. Thus British libraries will tend to acquire the higher ranking American periodicals in all subjects, and vice versa. The French and German languages are so relatively easily understood in Great Britain that German and French literature may be considered also to be sufficiently cognate for the above rule to apply. On the other hand, Scandinavian, Dutch, Russian, and to a less extent Italian and Spanish are relatively outside the primary linguistic range of the British, and the acquisition by British libraries of the scientific and technical literature in these languages is so limited and haphazard as to provide a doubtfully efficient test of ranking.

Acquisitions by libraries belonging to one region, of literature published in a relatively remote region, are usually dependent upon casual relationships, e.g. between corresponding institutions in each region, and upon the publicity given to certain periodicals by standard reference guides and by abstracting services. The characteristics of these guides will next be the subject of consideration.

REFERENCE GUIDES TO PERIODICALS

Standard reference guides to periodicals, whether national or international in character, usually avoid the function of ranking or evaluating the periodicals, and restrict themselves to listing titles and giving details of publication. Sometimes the periodicals are classified according to subject, but these classifications tend to be unreliable.

Usually purely popular journals are linked with highly technical ones in one comprehensive class. Institutional publications may be regarded as ranked according to the ascertainable status of their associated institution, but even this assumption can prove to be misleading, since an institution may publish matter of interest only to its affiliated members yet disguised under a title implying greater value. Again, many titles are ambiguous in this respect; an "annual report" may contain only administrative material; on the other hand, it may comprise very valuable and extensive accounts of researches undertaken.

ABSTRACTING SERVICES

Abstracting services are specially adapted to the expression of critical evaluation of the periodicals surveyed by them and forming the sources of their abstracts. By excluding periodicals completely from their survey, by restricting the proportion of articles abstracted, and by restricting the relative length of the abstracts, they can and do exercise the function of critical evaluation.

Generally speaking, the tendencies which have in the preceding paragraphs been stated to apply to library acquisition are equally valid in regard to abstracting services. These latter will also tend to confine their surveys to the higher ranking "general" periodicals.

On the other hand, they possess greater elasticity, and greater capacity to differentiate by selecting specific articles from periodicals of secondary rank, or by restricting the descriptions of articles of secondary importance to mere references to the titles, whilst providing elaborate abstracts of the articles held to be of primary rank.

Abstracting services may, therefore, be used to assess the value of periodicals in a variety of ways; by examining the lists of periodicals surveyed, and comparing these with the lists of other services according to the procedure outlined for library holdings; by closer examination of each service involving an estimate of the proportion of articles selected for reference from each periodical; or finally by a still more intensive analysis, taking into account the importance assigned to each article selected, as indicated by the length of the abstract.

The first method of examination is best suited to assess the value given to periodicals having a more comprehensive scope as regards subject than that of the abstracting service; the second, and for greater precision the third, are more suited to assess the value of periodicals having scopes equivalent to or included within that of the abstracting service.

Regional considerations come into operation for abstracting services, as for libraries. On the other hand, many abstracting services have arrangements with similar services operative in other regions whereby abstracts are interchanged. In this way it is possible for abstracting services to be more international in character than corresponding libraries.

Conversely, an abstracting service which surveys several thousand periodicals is exceedingly rare, whereas a library holding of periodicals of that extent is by no means unusual. Consequently abstracting services tend to be more exclusive than libraries. They attain at an early stage the "economic limit" of inclusion in their survey.

INDEXING SERVICES.

Where a service surveys periodicals and indexes their contents according to subject, but does not provide abstracts in the accepted meaning of the term, it can afford to be more comprehensive than an abstracting service and tends to approach more nearly the limits which are characteristic of libraries. It involves greater expense of description, but avoids the expense of conservation. Such services should be regarded as affording a grading intermediary between those provided by the holdings of libraries and the source periodicals of abstracting services.

REFERENCE USE STATISTICS IN LIBRARIES.

Many libraries keep elaborate statistics of the use made by different groups of readers of the individual books and periodicals contained in the library. Theoretically, statistics of this kind should afford the best type of guidance in the problem of evaluating periodicals. For certain purposes, e.g. providing select lists of periodicals in each subject category, the method is appropriate. On the other hand, for the more general problem of ranking the aggregate of scientific and technical periodicals, it introduces a factor difficult to assess correctly, namely, the motive of the particular reader.

Where a library has a large circle of outside borrowing institutions, valuable guidance is provided by an analysis of their demands, especially for periodicals outside the nominal subject scopes of the individual institutions. Most of these latter will possess libraries of the specialised type, and will meet thereby their requirements in regard to appropriate specialist periodicals, without recourse to the lending library. Requisitions made by them on the lending library will imply a need which cannot be satisfied by their own holdings, and will, therefore, enhance the status of the periodical concerned.

REFERENCE COUNTING IN BASIC PERIODICALS.

For the purpose of obtaining a select ranking list of the periodicals most appropriate to a specialised library, where original research is the dominating need, the method of "reference counting" has been used in several cases by American library investigators. This procedure involves the preliminary selection, by experts in the subject or from statistics of actual use in an appropriate library, of a series of basic periodicals known to be of great use in regard to the specific subject. Every issue of these periodicals is examined throughout a period, say a year. The citations given in all the articles throughout the year—i.e. the references to other relevant articles—are noted, and the periodicals cited are listed. Against each periodical is set the total number of citations given in all the articles in all the issues of the aggregate of basic periodicals. The cited periodicals are ranked accordingly. Distinction may be made where citations to a periodical of the "home" country are given in a foreign periodical, or vice versa.

A detailed account of the method will be found in an article "Evaluation of periodicals for Electrical Engineers," by Charles F. Dalziel, *Library Quarterly*, July, 1937.

This analysis is laborious, but appears to produce when completed a reliable select ranking list appropriate to a specific subject. It would be interesting to compare lists obtained in this manner from a different

set of basic periodicals. Doubtless the whole procedure is weighted by the initial selection of these basic periodicals, but the method has the very definite recommendation of being subsequently independent of the personal equation.

REFERENCES IN SPECIFIC BIBLIOGRAPHIES.

A specific bibliography, compiled in respect of a particular subject of inquiry, is normally a combination of references culled partly from indexing periodicals, partly from citations to relevant literature in the articles first located. If a sufficiently widespread series of such bibliographies were analysed, the periodicals cited could be ranked according to enumeration of the citations, much as is done in the procedure previously described.

THE TIME ELEMENT.

Although many periodicals have a long life, many others are very short-lived. It may be held that continued existence is a proof of recognised importance, and a periodical which has survived the assaults of time may be considered to have earned recognition thereby.

To some extent this claim is justified, but many periodicals of considerable antiquity persist at the present time rather because they satisfy a local need for expression than on account of their importance to the general body of scientific workers.

PUBLISHING AGENCIES

The auspices under which a periodical publication is issued may constitute a useful criterion of value. Publishers specially concerning themselves with scientific and technical periodicals tend to avoid undue competition and to restrict their issues to good-class journals relating to specific fields. There are individual, and to some extent national, deviations from this principle, but the status of certain publishers is well known to experienced librarians.

The known status of an issuing house is a useful guide in assessing the unknown importance of a relatively new periodical publication.

On the other hand, it is more difficult to employ this criterion in the case of a publishing institution; unfortunately from this standpoint, there is a vast number of institutions issuing scientific and technical periodicals.

EXPERT OPINION

The methods of evaluation outlined in the preceding survey have ignored the specific recourse to the opinion of expert selectors, although in all the methods some expert opinion is involved. Libraries and abstracting services have recourse to specialists, either on the staffs or external to them, in determining the bounds of their practical selections. In any case, no panels of experts exist at present, and the selection of the constituent members of such a panel might well involve problems as difficult as the selection of the actual periodicals! However, the value of directing the attention of such experts as are available to new or obscure periodicals should not be overlooked. Tendencies towards irrational and disadvantageous conservatism may thereby receive a healthy check.

BASIC PRINCIPLE IN SELECTION

The various methods of selection considered above may in practice lead to results which are not comparable with one another unless full weight is given to the functional characteristics of the agencies employed. Just as certain of the methods will be more applicable than others in particular problems, so also must the agencies chosen in using any one method be in accord with the problem to be solved.

This point may be illustrated by the following example. A large public reference library and a university library may both desire to obtain a select list of periodicals suited to their requirements. They are both general libraries, in the sense of having all branches of knowledge within their scopes. But their outlooks towards periodical literature, and particularly towards scientific and technical literature, are basically different. Periodicals acquired for reference in a public library must be more descriptive than concerned with laboratory or field technique, and the library will rarely acquire specialised periodicals, especially in foreign languages. A university library, on the other hand, will adapt its holdings to the requirements of its research personnel, and will tend to ignore the technical journals of a more descriptive character.

In the same way, although most of the abstracting and indexing services concerned with pure and applied science restrict themselves to the periodicals that recount original researches and applications, there are a few which deliberately focus on the periodicals more commonly found in public libraries.

Many of the existing reference guides are partially or mainly produced for the use of the less critical type of user, and their data should be regarded as of doubtful value in choosing periodicals adapted to more expert readers.

It is evident, therefore, that no single list, however carefully selected, will be adapted to objectives which differ in their functions.

PROCEDURE IN COMPILING SELECT LISTS.

A select list of periodicals should be consistent in its objective, and no attempt should be made to compile a list without in the first place defining the objective as precisely as possible. Generally, the definition will be related to a particular subject, a definite locality, and a special function. No one list can be adapted to all subjects, localities, and functions, and any attempt to produce a "universal" list is doomed to futility.

When the objective has been clearly defined, the available data should be surveyed, and an estimate made of the labour necessary to adapt the information to the particular objective.

Unfortunately, many of the existing compilations which contain potentially valuable information are not easily adapted to the purpose with which we are concerned. They have been produced for specific purposes not connected with the question of grading periodicals, and the titles of the publications are usually arranged in alphabetical order.

The first step in the preparation of a select list will normally consist in obtaining one or more groups of titles representing possible members of the final list. Each group will be specific in regard to function, region, and subject. The limits of each group must be defined by the proximity with which the group characteristics approach those of the list desired.

In the present state of reference works, this preliminary selection presents considerable difficulties. There are some fifteen to twenty thousand current scientific and technical periodicals of some potential value. A national list may contain several thousand titles; a group within that national list and related to the specific problem may well comprise a few hundred titles. It is not easy on general principles to exclude any member of the group from further consideration. Probably all that can be done at the preliminary stage is to exclude completely all groups which are "remote" from the problem on account of subject, region, or character.

Next, each group must be tested on the basis of the data available in regard to library holdings, abstracting surveys, etc. During these tests distinction must be made between the older and the newer periodicals. Lack of favourable notice of the latter should be treated with caution, and judgment reserved until a later date, when more recent reference works are available, or when specimens of the periodicals can be obtained.

By means of the group tests it will usually be found possible to grade the individual periodicals in each group into three or four categories. The decision as to which of these categories shall be included in the final list must depend upon the objective. Comparable groups in each region, and in comparable regions, should be treated uniformly, and equivalent categories included in the final list.

No list, however carefully compiled, can be final. New periodicals will arise to displace older ones, or to replace ones which have failed to justify continued existence.

It can, however, be claimed that a select list made on these lines will be of lasting value, and will enable a more balanced representation of periodicals adapted to any specific purpose to be made.

Collections of books and periodicals made by comparable libraries in the past have been haphazard in the extreme, as is revealed by union catalogues. Selections of periodicals even now made for abstracting or indexing are lacking in consistency. It is only by the application of data aggregated from a number of services that reasonably consistent selection can be made.

Although, as has been stated, each problem of selection is individual, whatever can be done, individually or by co-operation, to clarify the existing reference data will be of great assistance in all future problems of selection. It may be possible to arrange that some centre of information in this respect shall be established, for example at the headquarters of the *World List of Scientific Periodicals*, which must be interested in all data of this type.

If the data used in compiling the *World List* were suitably coded, for example by some machinery such as the Adrema or Hollerith, it would be possible for the authorities to supply specific group lists at will, at fairly low cost. These lists would probably have a ready sale to libraries, information services, and even research workers.

TESTS OF METHODS.

As an indication of the need for aggregating existing data, and the usefulness of the record, the following very limited experimental test may be of interest.

From the first few pages of the *World List of Scientific Periodicals*,

1934, items numbered 1 to 200, forty-eight titles were extracted as representing current technical periodicals. The British library holdings of each periodical were examined and, on the basis of number of holding libraries in relation to the country of origin of the periodical, each periodical was graded first, second, or third class. Next, each title was checked to see if it occurred in the *United States List of Serials*, 1927, and supplement, 1931, and the number of U.S.A. holdings noted in each case. On the basis of these U.S.A. holdings, the periodicals were again graded first, second, and third class. There were thus obtained eighteen first class on the basis of British holdings and nineteen first class on the basis of American holdings; fourteen of these latter corresponded to those selected from the British holdings.

Next, all the titles were checked against *Ulrich's Periodicals Directory*, 1935, and only nine of the forty-eight were found therein, whilst this reference guide contained only seven of the periodicals graded as first class in either the British or the American Union List.

In all, twenty-three of the forty-eight periodicals were graded as important on the basis of one or other of these three reference guides, whilst fifteen were assessed as of special value by not less than two guides; six were assessed as even more important by all three guides.

The use of three guides thus gave selections of six, fifteen, and twenty-three of the periodicals examined. The point of view in this examination is obviously Anglo-Saxon, although some attempt was made to correct this in assessing. In fact, of the six special selections one only was a British periodical; another was American; two were French; one was German and one Italian.

On the assumption that about 0.8 per cent of the *World List* periodicals were tested, the selections of six, fifteen, and twenty-three represent selections of approximately 750, 1,875, and 2,875 current technical periodicals respectively out of the total of approximately 6,000 included in the *World List*.

A second test, involving a comparison of different methods of selection, is of some interest. The objective was to obtain a select list of current electrotechnical periodicals—i.e. periodicals concerned solely with electrical engineering.

In the first place, a personal examination was made of current electrotechnical periodicals in the Science Library. Excluding those in the English language, sixty-eight "foreign" periodicals were personally judged to be first class.

Of the above sixty-eight, only forty were found to be indexed in any one of the three principal English-speaking abstracting services, *Science Abstracts B.*, *Metropolitan Vickers Technical News Bulletin*, and *Engineering Index*.

A check of the new *German Elektrotechnische Berichte* showed that forty-nine of the sixty-eight were indexed by this abstracting service, and these included fifteen of the twenty-eight not indexed by the three "English" services.

The *World List of Scientific Periodicals*, second edition, 1934, listed only sixteen of these twenty-eight periodicals, and gave no holdings for three of the sixteen.

Some of these periodicals are, of course, relatively new, but many of them date back more than ten years.

On the other hand, an examination of the periodicals indexed by

various services revealed many publications not represented in the Science Library. The majority have now been added to the Library's collection.

It is interesting to note that Dalziel, in the article on reference counting cited previously, only gives eighteen "foreign" electro-technical periodicals as worth obtaining or reviewing.

The above example illustrates the importance of employing more than one method to obtain a satisfactory solution of any problem of selection.

CONCLUSIONS.

Although each problem of compiling a select list of periodicals can only be solved satisfactorily by bearing in mind the characteristic circumstances, an approximate solution of considerable value can be made on the basis of existing data regarding library holdings, use in abstracting services, etc.

There is need for some co-ordination of data of this kind, so that the status of particular periodicals, or of members of a specific group of periodicals, can be ascertained readily.

The compilation and co-ordination of data of this type, relating to the whole output of current scientific and technical periodicals, is a task of some magnitude, but is not beyond the capacity of a single centre. Continual revision of the data would be involved, but this applies equally to all reference guides.

Modern mechanism for aggregation, coding, analysing, and reproduction by specific groups would enable a centre of information to produce at will a variety of lists appropriate to specific purposes.

Lists produced in this way could serve as basic lists for the purpose of final selection to meet individual needs. They cannot be expected to obviate the need for individual judgment, but will serve to set limits to the extent of personal examination needed.

DISCUSSION

The chair was taken by PROFESSOR R. S. HUTTON, and the following took part in the discussion.

DR. H. A. KRÜSS stressed the fact that the evaluation and the selection of the material that is to enter a library is of the greatest importance. He explained the organisation existing in the State Library of Berlin, where there are twenty librarians of different faculties ranging from two medical doctors and an engineer to a Doctor of Divinity, who have the task not only of classifying the incoming literature for the subject catalogue but, in their special field, of following up bibliographies, auction catalogues, etc., and of proposing the books and periodicals that ought to be acquired. To demonstrate how this system works, Dr. Krüss mentioned that the State Library had 75 per cent of the publications contained in the list given by Mr. Dickinson of the 400 best books published in the United States in the last decade, and 85 per cent of a list of books on social science compiled some years ago by Professor Douglas of the University of Chicago.

MR. G. H. DAVISON said that his observations were not intended to represent criticism of the subject-matter of Mr. Lancaster-Jones' paper. He would, however, like to ask him what steps he would take were Mr. Lancaster-Jones in his position, receiving requests from colleagues for the loan of publications (usually in French or German) referred to in abstracts. To illustrate his points, Mr. Davison said that his company subscribed amongst others to "Welding Index." He had with him details of three journals on weldings, to which reference was made in such abstracts. He could not procure them locally nor in the Science Library. His good and obliging friends at the Sheffield City Libraries had kindly offered to try to procure these journals through, say, the National Central Library, but this presented in

principle the objection of £ s. d., because as his headquarters were ten miles away from Sheffield, four separate postage charges would be incurred in the process of borrowing and returning, i.e. London-Sheffield, Sheffield-Stockbridge, Stockbridge-Sheffield, Sheffield-London, as he was given to understand that he could not deal direct with the National Central Library (even if it had the publications, which he rather doubted). Hence he would like to suggest that the Science Library should at least stock all journals cited in current abstracts as he could borrow direct from them.

Although perhaps not strictly on the points raised in Mr. Lancaster-Jones' paper, this seemed to Mr. Davison a fitting opportunity to refer to other services rendered by the Science Library. On behalf of his company he would like to express appreciation of the bibliographical services rendered by it. This has stood in good stead by enabling him to avoid needless repetition of research work which has already been carried out elsewhere. In this connection it would perhaps be useful to record here that the Iron and Steel Institute of the country have now made it a fixed rule that no research shall be entered into on their behalf without first of all surveying past accomplishment (in other words, preparing a bibliography).

A brief word about translations which are desirable to enable an appraisal to be made of the value of certain published literature and therefore could be regarded as within the scope of Mr. Lancaster-Jones' paper. During the discussion on Saturday morning of Mr. T. M. Herbert's paper, Mr. E. N. Simons made reference to a Sheffield scheme now in operation for the purpose of providing translations co-operatively. What would be of still greater interest would be the maintenance of a register of translations as proposed by Mr. Herbert. An objection to this, if kept locally, was that it was often undesirable for an important industrial organisation to allow its competitors to know prematurely the lines on which research was being planned and sometimes the subject of a translation might furnish a clue in this direction. This constituted an argument in favour of the register being national instead of local. He thought that if the Science Library, ASLIB, or some other central source were to institute such a register, his company for one would be prepared favourably to consider registering the titles of its translations with such registry on an anonymous basis, leaving open the question of whether to make the actual translation available or loan until it had been established that there would be a "quid pro quo."

MR. J. LEWKOWITSCH suggested three points might have been overlooked in the evaluation of periodicals.

1. An abstracting periodical might not be a reliable guide to selection, as it might be dependent on the journals available to it. For example, the British Chemical Abstracts was largely based on the library of the Chemical Society, and so its selection was dependent on that library's selection.

2. When an expert assessed the value of a journal, he tended to select those with the largest number of good articles. But an author often publishes at length in a lesser-known journal and more briefly in the well-known journal. Thus an author may write in full in the *Bulletin de l'Institut colonial de Marseille*, but briefly in the *Comptes Rendus de l'Académie de Sciences*. Now the *Comptes Rendus* would be selected as a worth-while periodical, as it contained the cream of the smaller journals, and the *Bulletin de l'Institut colonial* would be neglected. But the fuller exposition of the paper in the smaller journal was of greater value to the scientists.

3. Some journals, such as the *Oil and Colour Trades Journal*, which is largely market news, personalia, etc., do publish general articles of the type designed for students. Now to the experts, these articles were unimportant, but the articles were of great value to workers in other fields, who might require a smattering of the subject in the student-article. And so the apparently worthless journal might acquire a greater importance.

MR. L. C. WHARTON said the paper at last afforded a test apart from idiosyncrasy. As to the *World List*, its source must be considered and the difficulty in its compilation. It was desired to give language, subject, and society publishing, but this was not permitted. Further, as to general libraries of Science, Humanities, and technical ones, it was desirable to cater for historical study by having the heterodox literature of the past included also.

MR. B. AGARD EVANS made the point that the number of citations of periodicals in a single abstract journal such as *Road Abstracts* could not be used to assign an order of merit to the periodicals as to their value to Road Research. One journal of largely ephemeral interest might contain notes on research projects and provide material for forty or fifty abstracts in a year, while another journal containing accounts of

completed research of fundamental importance might provide only three or four abstracts.

MR. LANCASTER-JONES thanked the various contributors to the discussion for pointing out additional factors indicative of value in periodicals, and others qualifying the methods outlined in his paper. He agreed with Mr. Davison that a translation of a paper should act as a criterion of value, but thought that the question of a register of translations might be referred to ASLIB. He agreed with Mr. Lewkowitsch that the number of articles in a journal might be a misleading indication of value in many cases, but thought that abstracting services must bear the onus of omitting to consult periodicals which, though not available in the libraries of the associated societies, could be seen in other libraries in their vicinity. He doubted whether the needs of the general public, or of specialists inexperienced in particular fields, for articles conveying specialist information in "popular" language should carry much weight in evaluating periodicals. In reply to Mr. Wharton, he appreciated the difficulties of the compilers of the *World List*, but hoped that in a new edition, or in a supplement to the present edition of that publication, the editors would be able to publish the data obtained, or obtainable, in regard to the languages, subjects, and other characteristics of the periodicals listed.

Directories of Documentation Centres.*

By F. DONKER DUYVIS.

The aim of the International Federation for Documentation is to see that the products of intellectual work are rendered as accessible as possible to mankind and serve the original purpose of their authors.

There exist throughout the world many information bureaux, "documentation centres," and similar institutions which have been founded in this same spirit. There are even so many of them that information is wanted about the places where information may be got, what is the kind and scope of information, and how it might be co-ordinated with information from other sources. So the demand for directories or guides of documentation centres has grown and various publications have appeared either giving a survey of the organism for information, within the limits of a certain country or of the information centres concerning a special field of science.

The first important publication of this kind was, so far as I know, the *Annuaire de la Belgique Scientifique, Artistique et Littéraire*, published in 1908 by the Institut International de Bibliographie. In 368 pages it gives a survey of the prominent Belgian institutions dealing with Sciences and Arts with a short description of their history and organisation, their activity, their documentary collections, and their accessibility.

Of course thirty years ago bibliographical and other documentary methods were not so far developed as to-day. Nevertheless it is striking that the outlines of this *Annuaire* and the questionnaire which served as a base for its composition were not so far different from what we find in modern directories of this kind.

After the war there appeared the *American Special Libraries Guide*, followed pretty soon by the first and still most important European directory: the *ASLIB Directory*, after which a series of national and international guides were published.

In the accompanying table† some data are assembled about the following guides:

1. *Handbook of International Organisations*. Geneva, 1938, 491-2.

The first edition of this handbook was issued in 1921. The aim was to provide a source of information for all who are interested, whether theoretically or practically, in the international movement. Organisations are classified according to the subjects with which they deal (e.g. politics and international relations; pacifism; religion; humanitarianism and morals; arts and sciences; education; medicine and hygiene; press; agriculture; trade and industry, etc.).

The League's own organisations are not mentioned (full information about them being available in *Essential Facts about the League of Nations*). The handbook ignores international organisations which are run solely for profit as well as those which exist on a purely national basis.

2. *Bulletin de la Coopération Intellectuelle. Numéro spécial sur la Documentation*. Paris: Institut International de Coopération Intellectuelle, 1937, 77 pp., 177-240.

* Slightly abridged. † See Table A, pp. 94-95.

Describes the documentation centres (mostly in Europe), which are divided into :

(A) Members of the I.F.D. ;

(B) International organisations, affiliated to international institutions. At the end, the national unions of documentary organisations.

3. *Guide des services nationaux de renseignements du prêt et des échanges internationaux*. Institut International du Coopération Intellectuelle, 1933, 21ème éd., 61 pp.

Gives information about postal facilities and customs formalities concerning loan, the name of institutions in fifty-seven countries who are willing to loan (on a reciprocal basis), and the co-operation of different libraries.

4. *Guide international des archives*. Europe. Paris et Rome : Institut International de Coopération Intellectuelle, 1934, 393 pp.

Guide destined for archivists and scientists, giving the necessary information about the essential points of laws and rules concerning archives in Europe and their internal organisation.

5. *Répertoire international de centres de documentation politique*. Paris : Institut International de Coopération Intellectuelle. Publié en trois éditions : française, anglaise, et allemande, 171 pp.

It comprises a list of institutions which serve as centres of documentation in political problems ("politics in the widest sense of the word"), with exception of the centres which are dependent on political parties. It is a counterpart of the following guide (No. 6).

6. *Institutions pour l'étude scientifique des relations internationales*. Paris : Institut International de Coopération Intellectuelle. Publié en trois éditions : française, anglaise, et allemande, 107 pp.

A list of institutions associated with the London Conference for the scientific study of international relations from March 11th to 14th, 1929.

7. *Répertoire des centres nationaux de documentation pédagogique*. Paris : Institut International de Coopération Intellectuelle. Paris : 1934. Publié en deux langues : française et anglaise, 87 pp.

Contains notices on the constitution and principal activities of the institutions to which the National Educational Information Centres (constituted under the auspices of the Institute of Intellectual Co-operation) for each country are attached.

8. *Répertoire International des centres de documentation chimique*. Paris : Office International de Chimie, 1935, 115 pp.

The repertory includes only such documentation centres as are open to the public, to the members of learned societies, etc., to the exclusion of the documentation services set up by the several administrations, industrial or commercial firms, etc., for their private needs, and for the exclusive benefit of their own staff. The task of these centres is defined as the analysis of all the useful information contained in the documents relating to the more or less extensive field of chemistry and its applications.

9. *Guide mondial pour les bibliothèques et centres de documentation agricoles, à Rome*. Rédigé par l'Institut International d'Agriculture.

Will be issued in two languages (French and English) at the end of 1938.

10. *The ASLIB Directory*. A guide to sources of specialised information in Great Britain and Ireland. London: The Oxford University Press, 1928, 425 pp.

The *ASLIB Directory* will be "a most useful fingerpost to those who appreciate the necessity for knowing precisely where information of a specialised character may be obtained."

It contains centres of information ranging from governing departments, institutions, libraries, societies, and associations of all kinds to individual collections.

11. *Verzeichnis von Schrifttum Auskunftstellen der Technik und verwandter Gebiete*. Deutscher Normenausschuss. Berlin S.W. 19: Beuth-Verlag GmbH, 1937, 64 pp.

A list of centres (private and those of societies) giving information about technical and allied literature in all its forms, including the general and public libraries.

12. *La documentation en France*. Répertoire des centres de documentation existant en France. Paris: Union Française des Organismes de Documentation, 1935, 146 pp.

A list of documentation centres (in the same sense as with repertory No. 8) in France, with information giving an exact idea of the services rendered by these centres.

13. *Projected Swedish directory*.

A suggestion for a guide for national and special documentation centres for the aid of students and research workers.

14. *Réseau de Documentation*. København: 1935.

A systematically classified set of cards with addresses of Danish libraries, scientific institutes, and laboratories.

15. *Nederlandsch Instituut voor Documentatie Registratuur N.I.D.E.R. Documentatiegids voor Nederland*, 's-Gravenhage: Martinus Nijhoff, 1937, 509 pp.

A repertory of institutions in the Netherlands on pure and applied science, on arts and trade, which can give bibliographical and other kinds of scientific information.

16. *Verzeichnis schweizerischer Literaturnachweisstellen*. Bern und Zürich: Schweiz. Landesbibl. u. Betriebswirtschaftl. Inst. der Eidg. Tech. Hochschule, 1938, 20 pp.

A repertory of documentation centres in Switzerland, including the general (scientific) libraries divided in six chapters (education, trade, industry, agriculture, etc.).

17. *Special Libraries Association, Special Committee. Special Libraries Directory of the United States and Canada*. New York, N.Y.: Special Libraries Association, 1935, 3rd ed., 253 pp.

Comprises not only libraries which are members of the Special Libraries Association, but all existing special libraries in the U.S.A. and Canada, as far as this is possible, and also special departments of public libraries, and special collections and departmental libraries in large universities and colleges.

It may be observed that the aforesaid list only gives a selection of the most important documentation directories *strictu sensu*. Of course there are many lists of libraries, museums, laboratories, etc., which may

also be considered as guides for centres of information, e.g. the many library directories, the *Minerva*, the *Index Generalis*, the lists of agricultural research institutions, published by the International Institute of Agriculture, various lists of laboratories and other research institutions, etc., all of which may be considered as guides to sources of documentation.

One of the problems in this respect is the question : What is meant by the words *documentation centre* ?

Various attempts have been made to establish a terminology in the present field by Paul Ledoux, Paul Bourgeois, Carl Walther, Mrs. Suzanne Briet, and Miss Rothbarth.

The latter has included the work of the former in her *Projet de Guide de Documentation* and she arrives at the following definition :-

Documentation Centre. The whole of a service systematically organising the work of making documentation (whether general or in a special field and whether exhaustively collected or selective) available to those interested.

A documentation centre includes the preservation of documents and references to documents, their analysis and the circulation of the information so obtained. It necessarily implies co-operation between the services :—

1. For assembling, registering, and classifying documents, such as record offices, libraries, depositories of cinematograph films and gramophone records, museums, etc. ;

2. For analysing them and extracting from them such material as may be capable of use in the preparation of repertories, files, abstracts, etc. ; and

3. For putting the information at the service of the public by verbal or written communication, publication, reproduction or translation of documents, etc.

Information Centre. For an information centre the provision of documentation is only incidental. It possesses neither trained staff nor equipment, nor, in most cases, retrospective material serving the purpose of documentation.

In these definitions the word *document* means :

Any source of information, in material form, capable of being used for reference or study, or as an authority.

Examples : manuscripts, printed matter, illustrations, diagrams, museum specimens, etc.

Documentation. The determination, identification, collection, and use of documents.

Such definitions are very edifying, but practice shows that every editor of a directory has read them in his own way.

Various desiderata for documentation directories. From the standpoint of universal documentation the following questions might be put :

1. Is a unification of the existing directories wanted or desirable ?

2. Which recommendations should be made in order to render the directories as suitable as possible for their purpose ?

3. Is it desirable and possible to organise an international guide for universal documentation?

Standardisation. As to the first question I do not think there is a real urgent need for unification. We live in a century where standardisation is *en vogue*, but we should refrain from exaggeration in this direction.

It is convenient for the officer at the information desk of some documentary centre, for the guides before him to be easily handled, and from that point of view some uniformity will be agreeable. But most of those guides will be from the country in question. It is only exceptionally that a documentation centre possesses more than three or four of the directories mentioned in the present paper. So the need for standardisation is in this respect far more national than international.

Even if there is no direct need for standardising directories, it seems desirable to compare the existing editions and to note which examples should be followed and what should be avoided.

Data to be recorded. There is a practically unanimous opinion that the following data should be mentioned :

Name and address.

Field of activity.

Accessibility. Office hours, etc.

Type of information given.

Publications by the institution.

As to these data the weakest point in most directories is the circumscription of the field of activity. In most directories the description of the field in which the institutions are specialised is too vague.

In the majority of directories it is desirable to give some quantitative data about the size of the collections.

The American system of describing the collections by specifying the numbers of books, of pamphlets, of periodicals, and of vertical files deserves recommendation. With a view to European collections which are often large on account of their age it would perhaps be useful to add figures concerning the yearly increase of the collections and also to give some figures about the card catalogues in use.

The tendency to mention legal status of the institution, the historical facts, finances, the composition and names of the members of the staff is only small. Also tariffs are usually not mentioned, nor particulars about the classification in use.

In fact these data are as such of minor importance, but it should not be forgotten that just the combination of all these particulars gives an idea of the scope and the extent of the institutions described.

The drawback of mentioning names is that frequent mutations of personnel cause a guide quickly to become out of date.

Only a few directories mention the publications describing the recorded institutions. However, this latter policy is strongly to be recommended. The broad descriptions in conference reprints, etc., give a better idea concerning the nature of an institution than the more or less standardised description in a directory.

The American *Special Libraries Directory* has perhaps best succeeded in giving in the smallest number of words a good survey of the documentary value of the institutions records.

Number of institutions recorded. A further problem is whether the definition of a documentation should be taken in a very broad sense or just the opposite.

The French guide gives a very extensive and useful description of only a few institutions. The drawback is that most of those institutions are generally known and the people are merely searching for the less-known offices. The Dutch directory shows the other extreme. The many small institutions mentioned in this publication may be of national interest, but the majority of them are of no importance for foreigners. For international purposes the *juste milieu* should be chosen and, e.g., about fifteen to twenty institutions per million of inhabitants might be sufficient. The Swiss guide may be considered as a good example of the relative quantity of institutions mentioned as compared with the extent of the population.

Indexes. The problem of arrangement of the main index is solved as a rule by arranging the institutions geographically. In fact, this is the most simple and objective arrangement, but practically it is as useless as an alphabetical or chronological arrangement would be.

The searcher wants to approach his subject by some subject entry either in dictionary form or in the form of a systematic index. Of course, in all directories auxiliary indexes in one of these forms are available, but only in a few guides do they serve as main entry. The objections against a systematic arrangement of the principal material are.

1. A large number of documentation centres are not specialised ;
2. Those which are specialised usually cover more than one special subject.

The first objection is not a very serious one. It is quite possible to put the "general" information services first under a heading for "general."

The second objection requires more careful consideration. It will be necessary to avoid a too-detailed subject classification in order to prevent an undesirable abundance of cross-references. The Swiss and German directories and the League's *Handbook of International Organisations* show that it is quite possible to realise the systematic arrangement in a satisfactory way.

It might still be possible to add for cross-reference purposes a large number of subject headings classified in extreme detail, if only the descriptions of the scope of the institutions are given under the more general headings.

A systematically classified index seems preferable to an alphabetical subject index. The searcher wants as a rule a very special subject which is subordinate to a number of more general notions which cover the field of activity of a series of information bureaux.

Suppose that one has to make a search in connection with a special question concerning heredity. He will then have to deal with information bureaux in the field of biology, genetics, botany, zoology, physiology, natural history, zootechnics, agriculture, etc.

There is a danger that he will miss an important source if the relative information bureaux are scattered over the alphabet of an alphabetical subject index.

In a systematically classified index he will find together all institutions

dealing with biology and cognate sciences and also the institutions dealing with agronomy, so that he will find the series of addresses he wants, at the outside, in two different places.

The general criticism may be allowed that most of the directories have too many separate indexes. Why can indexes concerning names of registered institutions, names of staff members, subject headings, etc., not be combined? If no subject classification is used, it is theoretically possible to bring together the whole contents of a series of indexes in one single dictionary index. Of course in such a dictionary index some rules should be fixed, e.g. that the main descriptions of institutions are to be found under the geographical headings. In the case where a subject classification is recommended, the whole directory might consist of two indexes: a classified index and a dictionary index. The multiplicity of indexes means only a nuisance to the user.

The questionnaire. The most important base for a directory is the questionnaire. To-day every human being passes a part of his life in filling up forms and it is only seldom that he likes it. Although it is obvious that the questioner wants to gather as much data as possible, he has to take this psychological fact into account. In preparing a questionnaire the *juste milieu* should be chosen, so that the number of questions should be limited. The most extensive and—from the standpoint of the questioner—most valuable questionnaire has been distributed by the Institut International d'Agriculture. The shortest and clearest one is from the Special Libraries Association, and experience has shown that it was effective.*

Universal Documentation Directory.

The fact that some of the most important civilised countries possess or are already preparing documentation directories, whereas a great number of specialised directories also exist (apart from the directories mentioned in this paper) makes it clear that the preparation of an international universal documentation directory would involve the part duplication of work that has already been accomplished. It is obvious that the preparation of such a guide cannot be recommended.

Nevertheless, the present situation is far from satisfactory for those who do large-scale documentary work and want to realise it in international co-operation.

Directories devoted to the documentation in special fields of science are still exceptional.

Although there are directories issued in a number of big important countries they are lacking in most of the minor countries. The study of the statistics of intellectual production teaches that just in the small and especially the new countries there is strong activity and a stream of printed material which is not easily accessible. The tendency to-day towards nationalism also causes far more original work to be published in more or less "exotic" languages than a few decades ago.

A survey of the centres, which can serve as intermediates to make the said material more available, would certainly be desirable.

So it might be considered whether an auxiliary universal directory covering the field outside the existing directories should be compiled.

International enterprises of this kind are not easy and the experience

* See Appendix, p. 92, and Table B, p. 96.

of them has up to now not been encouraging, if no extensive financial means were available.

The following difficulties met with in compiling the national repertories have still a stronger effect in analogous international work :

(1) The tempo of the whole work is determined by the institutions or even the countries which are most behind, which are least active and show the least efficient service. The following up of late-comers, visiting them, reminding them, inserting in the indexes the material, provided too late, inserting all kinds of late corrections, together cause a tremendous increase of costs.

(2) Even with the best drafted questionnaire the notions in the various countries about what should be mentioned in a directory and what not are so very different that it will be extremely difficult to make a well-balanced publication.

(3) An auxiliary universal repertory would be so large that most subscribers would only want some parts of it, either dealing with certain countries or with certain special sciences. The editors would have to select the main arrangement either by countries or by special sciences.

(4) The greatest drawback (shown already by various national directories) is the fact that a directory is already out of date the day it is issued. This drawback is the more severe in international work, which will require some five years of preparation.

Most of the aforesaid drawbacks might be avoided if we were to give up the idea of issuing a directory in the form of a big monograph which is closed at a certain date.

Instead of this, the data about sources of documentation might be issued in the form of a serial work.

The lists of documentation centres of a certain country or a certain special subject or even of a special subject in a certain country might be published as soon as ready. Each notice should be drafted in such a way that it might be cut out and classed according to subject-matter, to country, to place or by alphabet. Yearly (cumulative) indexes should be made in systematic and in dictionary form.

In the serial publication the notices should be arranged according to countries subdivided by special subjects, in such a way that the data concerning a special science are published on separate leaves. In this way it would be possible to bind the leaves in the form of national directories as well as of special directories, whereas, moreover, the possibilities would exist of mounting the notices on cards and the establishment of current repertories.

The progress of the work would not be retarded by late-comers. Neither would it matter very much if in some special field of science or with a view to some special country relatively more material were given than in other cases. Gaps might be filled up later on. In the course of some years the greater part of the material would be gathered, so that later the periodical additions would be less extensive but nevertheless would keep the repertory up to date.

I might add that the idea of establishing international loose-leaf repertories is not at all new. It has been realised and has proved for many years of practical value in the field of industrial property.

Editions such as Haddan's Compendium, *Patent and Design*; White & Ravenscraft, *Patents throughout the World*; A. Katz, *Patent- und Markenrecht*, etc., in the matters of patent law, trademarks, copyright, etc., have been established on an economic base and are regularly used by experts in those branches of law.

It seems desirable that the notices about the institutions should include at least name, address, a clear description of the field of activity, and as detailed as possible a description of the collections and catalogues. Further, some information about the services rendered to the general public and references to publications on and by the recorded institutions should be included. All those details should be in English, French, or German and, moreover, in the language of the country, where the institution has its seat. Each notice should be accompanied by a classification symbol, e.g. the Universal Decimal Classification.

I think it might be possible to add to the Bulletin *I.I.D. Communications* the leaves of a universal documentation repertory as a regular supplement. However, the problem of printing and issuing is the least difficult one. More important and more difficult from a financial point of view is the preliminary organisation for gathering the "raw material."

It is hoped that the members of our Federation will give their advice and their moral and material help to realise such a scheme.

APPENDIX

QUESTIONNAIRE. (CIRCULATED BY THE INTERNATIONAL INSTITUTE OF AGRICULTURE.)

I. General information.

1. Official name :
2. Exact address :
3. Date and year of foundation :
4. Other noteworthy events in the history of the Library :

II. Concerning the book collection.

5. What subjects are represented in the Library ?
 - (a) Agriculture in general ;
 - (b) Special subjects ;
 - (c) Auxiliary sciences of agriculture ;
 - (d) Other subjects.
6. Does the Library receive a large number of publications in foreign languages ?
7. Does the Library possess a large number of old or rare books (prior to 1800) ?
8. Does the Library possess special collections ?
9. Has the Library branches or departmental collections (e.g. Library of Institutes, Seminars, Laboratories, etc.) ?
10. System of shelf classification ?

III. Size of the collection.

11. Total number :
 - (a) Volumes :
 - (b) Pamphlets :
 - (c) Periodicals currently received :
 - (d) Newspapers :
 - (e) Incunabula :
 - (f) Manuscripts :

IV. Catalogues.

12. Is there a printed catalogue of books ?
13. Is there a printed catalogue of periodicals ?
14. Is there a bound manuscript catalogue ?

15. Is there a manuscript catalogue on cards ?
16. What kind of catalogues are there ? (Alphabetical author catalogue, alphabetical subject catalogue, classified subject catalogue, dictionary catalogue (author and subject combined), country catalogue, special catalogues.)
17. Other special repertories ?
18. Classification system used in the classified catalogue :

V. Service to readers.

19. Days and hours of opening :
20. Rooms accessible to readers. (Study room, reference room, circulation room, etc.) Seating capacity.
21. Number of readers (annual average) :
22. Are readers allowed to use the books in the stacks ?
23. Does the library furnish bibliographical information to the readers ?
24. Total circulation of books (annual average) :
25. Are books loaned for use outside of the Library ?

VI. Relations with other libraries.

26. Does the Library consent to (or refuse) interlibrary loans (within its own country, foreign ?)
27. Has the Library publications to exchange with other libraries ? What are these publications ?
28. Has the Library any duplicate exchange agreements ?

VII. Staff.

29. Total number :
30. Name of Director (or librarian) and professional assistants. (Indicate also the University or professional degrees held by each.)

VIII. Publications.

31. Publications published by the Library (Bibliographies ? Bulletins ? Handbook for the readers ? Rules for cataloging, etc. ?). (For catalogues see IV.)
32. Publications (including articles) concerning the library :

IX. Supplementary remarks.

TABLE A. DOCUMENTATION DIRECTORIES.

	Handbook Int. Org.	C.I.C.I. Bulletin	Guide des Biblioth.	Archives.	Doc. polit.	Rel. internat.	Doc. pédag.	Doc. Chimique.	Doc. Agricoles.	ASLIB Dir.	Techn. Schriftt. Auskuntst.	U.F.O.D.	Swedish Dir.	Danish Dir.	N.I.D.E.R.	Schweiz. Lit. Nachw.	Spec. Lib. Dir.
NUMBER OF REGISTERED CENTRES . . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
REGISTERED DATA :	700	36	61	42 ¹⁾	127	45	33	45	?	2200	250	73	?	167	2100	68	1475
1 Name and address. Seat . . .	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
2 Telephone number . . .									+	+							
3 Office hours . . .				+			+										
4 Status (institution, association, numbers, etc.) . . .	+	+	+	+	+	+	+	+									
5 Finance . . .	+																
6 Composition of staff. Governing body . . .	+			+	+	+		+	+				+				
7 Names of staff members. Officers . . .	+				+	+	+										
8 Date of foundation . . .	+	+			+	+	+	+	+	+							
9 Historical facts . . .	+			+	+	+	+	+	+								
10 Object and aims. Field of activity . . .	+	+	+	+	+	+	+	+	+				+		+		
11 Form of documentary material (books, films) . . .			+		+	+	+	+	+	+	+	+	+		+	+	+
12 Quantity of documentary material . . .			+		+	+	+	+	+	+	+	+	+		+	+	+
13 Classification used . . .					+	+	+	+	+								
14 Accessibility (for general public, for members only, after introduction, etc.) . . .				+	+	+		+	+								
15 Type of Information given (bibliography, abstracts, advices, etc.) . . .		+	+		+	+		+	+	+	+	+	+		+	+	+

TABLE B.

QUESTIONNAIRE SCHEDULE

Name of Organization.....

Address..... Telephone No.....

Name of Librarian.....

Type of Library..... Number of Staff

Date Library was Established..... To Serve

Approximate Number of Books

Approximate Number of Pamphlets (if Kept Separately).....

Number of 4-Drawer Units of Vertical Files.....

Important Subjects in Collection.....

Special Collections.....

Names of Senior Assistants.....

(IF YOU WILL OBSERVE THE FOLLOWING CAREFULLY, THE WORK OF THE PUBLICATIONS COMMITTEE WILL BE GREATLY SIMPLIFIED)

1. Please type or print. This is important.
2. Type of Library.—Under this, state whether it is Advertising, Financial, Publishing, Engineering, Religious, etc.
3. To Serve.—Indicate whether it is for own organization only (for executives, certain departments or whole organization), for members of an association, the public, or all three.
4. Fill in line under "Pamphlets" only if they are separate collection and NOT counted under "Approximate Number of Books."
5. Vertical files.—If you use 5-drawer units, replace figure "4" with "5."
6. Important Subjects in Collection.—To avoid as much as possible general subject headings such as banking or economics, please state specific fields covered, such as Merchandising, Rubber, Iron and Steel, Foreign Exchange Securities, Reconstruction.
7. Special Collections.—Means collections such as : pictures, maps, clippings, corporation files, or anything out of ordinary that your library may have.
8. Give names and titles of assistants (other than clerical), such as : name of cataloger, reference librarians, first assistant.

Questionnaire distributed by the Special Libraries Association.

Tools for Library Co-operation in the United States.

By LINDA H. MORLEY.

This symposium, participated in by representatives of different countries and presenting reports on the tools for co-operation within the several countries, is a welcome indication of the trend toward a world viewpoint in intellectual activities and of the forward-looking policies of such organizations as the Association of Special Libraries and Information Bureaux and of the International Federation for Documentation. It is thought that a survey of the tools for library co-operation evolved or projected in the United States since the beginning of the present century would present the best picture of the status and trend of facilities for co-operation in this country and that the members of this conference are interested primarily in obtaining such a broad overview rather than a knowledge of specific publications or projects, however important some of these may be individually.

The obvious tools specifically designed for co-operation between libraries are the several kinds of directories of libraries and special collections, union lists and catalogs indicating the holdings of groups of libraries, and a few other guides to library resources. In addition, there are directories and other handbooks to sources of specialized information which serve as tools of co-operation between libraries and other organizations concerned in research and in the distribution of knowledge.

The information on hand concerning directories and union lists is not the result of an exhaustive search and is doubtless not complete even for the period from 1900 to 1937, but limited as it is, it nevertheless provides proof that approximately fifty-five library directories, twenty-six of which are revised editions, and over a hundred union lists and catalogs of varying kinds, have been compiled and made available to librarians during these years. These figures exclude international and other directories of educational institutions that list some libraries.

DIRECTORIES.

There are three library directories covering the United States as a whole. One of the first projects of the official journal of the Special Libraries Association, organized in 1909, was the compilation of a *Directory of Special Libraries*,* which included a subject index to the 108 special libraries listed. The first separate directory was not published until 1921. A second edition appeared in 1925, and the latest one in 1935. This latest directory,† which covers nearly 1,500 libraries, is arranged geographically in order to facilitate local co-operation between libraries, and a detailed index provides an approach through the 3,700 subjects which these libraries cited as of importance in their collections. Special collections, special departments and branches of

* *Special Libraries*, vol. 1, pp. 27-32, 1910.

† Special Libraries Association, *Special Libraries Directory of the United States and Canada*, New York, 1935.

public libraries and departmental libraries of universities are included in this publication.

The *American Library Directory* * is probably the one best known to the library profession as a whole. First issued in 1923, it has appeared in four editions, and a fifth is now in process. The present edition lists nearly 10,000 public, college and university, reference, governmental and institutional libraries and their special collections, with some statistical data for most of these. As a guide to sources of specialized material it is not as valuable as the *Special Libraries Directory* † because it includes few special libraries and its subject index covers only collections of outstanding importance. The forthcoming edition is to have the same coverage.

The United States Office of Education began the publication of its *Statistics of Public, Society, and School Libraries* ‡ in 1875, although a list of libraries which probably constitutes one of the earliest library directories, had appeared in its annual report § as early as 1870. Issued at intervals of from three to ten years from 1900 to date, this compilation is valuable from the point of view of library co-operation primarily for statistics indicating the size of libraries and those that lend material for use outside of the building.

There are two other national directories || that list special libraries and special collections, but no recent editions of these have been published.

Local directories have been sponsored by at least eight chapters of S.L.A. and seventeen other local professional associations. In all, at least eight states and eight of the largest cities have separate directories to their library resources. The lists sponsored by the S.L.A. chapters, and several of the others, give detailed information with respect to subject specialization of both special libraries and special collections. The recognized value of such guides as these is evidenced by the fact that as many as five editions have been compiled for one city, and that six other revisions were published between 1920 and 1937. In many special libraries the local library directory is reported to be one of the most valued reference tools and is kept on the desk of the librarian for frequent consultation.

Special types of libraries have been listed in many library periodicals and other professional journals as well as in books on library and research methods in particular subject fields, and a few lists have been separately published, mostly in mimeographed form. Such lists are available, among others, for : chemistry, business, law, agriculture, history, medicine, music, insurance, public administration, municipal reference, state and legislative reference libraries. It is interesting to note also that in some recently published directories of organizations in certain fields, such as public administration, science, etc., one of the items of information given for each organization listed concerns

* New York : Bowker, 1935.

† Op. cit.

‡ Washington, D.C. : Government Printing Office.

§ Washington, D.C. : Government Printing Office.

|| W. D. Johnston and I. G. Mudge, *Special Collections in Libraries in the United States*, Washington, D.C. : Government Printing Office, 1912 (United States Bureau of Education Bulletin, 1912, No. 23).

E. C. Richardson, *An Index Directory to Special Collections in North American Libraries*, Yardley, Pa., 1927.

the library and its resources. When such organization directories have a detailed subject index they serve as guides to libraries in specialized fields and also afford a means of discovering libraries very rich in material within their particular fields of interest but not listed in the library directories because they are not fully organized or under the direction of a librarian.

When the need to discover libraries and collections in very specific fields occasions intensive search, *Library Literature** and other bibliographies act as tools of co-operation in directing one to extended descriptions of individual libraries that may yield positive or contributing evidence of the libraries that will be of greatest service on the particular problem.

UNION LISTS AND CATALOGS.

A survey of the literature of this subject reveals more than one hundred union lists or catalogs compiled or in process since the turn of the present century. Figures available on the number of libraries co-operating in these enterprises show an average of thirty-eight per list. It is estimated, therefore, that libraries participated in efforts to supply such tools of co-operation about 3,500 times.

Interestingly enough the geographical coverage with respect to location of holdings listed is almost equally divided between those covering all sections of the country, those including libraries in one or several neighboring states, and those limited to one city and vicinity. With the exception, however, of the Union Catalog of the Library of Congress, all lists and catalogs not restricted to certain cities or states cover one subject or one type of publication only.

The movement, now rapidly gaining headway, for the regional co-ordination of library resources in the United States has resulted in many new projects in the past few years. In fact the union lists and catalogs published or initiated since 1930 equal the total number that came into being during the previous thirty years. The program to develop "document centers" in each state got under way in 1932 and is responsible directly or indirectly for most of the tools in this field. Another form of regional planning has resulted in the establishment of "Bibliographic Centers" with "Regional Union Catalogs" having author cards for all important books in the libraries of each region in about ten sections of the country. No country-wide plan such as exists in Great Britain has as yet evolved, but a survey of library resources in thirteen Southern states † has just been completed. This is the only study of its kind but it will doubtless be followed by similar surveys for other sections of the country. Such surveys are desirable in advance of regional planning on a national scale for a country as large as the United States, and it is probable that under the direction of the A.L.A. Board on Resources of American Libraries and with the co-operation of the newly authorized Library Division in the United States Office of Education library mapping of the United States will get under way and regional union catalogs will be established gradually on some sort of unified and co-ordinated plan.

* New York : Wilson, 1936-8. Chicago : American Library Association, 1934.

† Robert B. Downs, ed., *Resources of Southern Libraries*, Chicago : American Library Association, 1938.

The scope of facilities afforded by these regional union catalogs and that at the Library of Congress for determining the whereabouts of individual books is evidenced by the fact that in 1937 the Union Catalog of the Library of Congress reported 15,000,000 entries;* the Union Library Catalog of Philadelphia had records for two and one-half million publications for the 150 libraries in that vicinity;† the Cleveland Regional Union Catalog had two million cards;‡ and the New Jersey Union Catalog had received 34,000 cards from the county libraries of that state.§

While most of the earlier attempts to provide tools for the location of particular publications resulted in published union lists, the present trend, as far as regional projects for locating books are concerned, is toward a union author catalog, of the unusual and more important books, especially from the research and historical point of view, housed in one of the larger reference libraries of the region, in the form of a card catalog.

Perhaps to special librarians the subject coverage of the tools for library co-operation has the greatest interest. In the United States the field of science and technology seems to stand alone in the production of such aids, with at least sixteen union lists for material in one or another division of this department of knowledge. There appear to be few other subjects represented, although historical and local material and publications in foreign languages have been covered by a number of lists.

With respect to the forms of publications covered, appreciably more than half of the union lists published or initiated since 1900 are concerned with serials. While approximately a dozen are limited to the listing of newspaper holdings, and a slightly larger number to periodicals, the majority include two or more classes of serials and it seems probable that on examination the major portion of these lists would be found to cover most types of serial publications. There are relatively fewer new editions or supplements in this group of co-operative tools than is the case with library directories. Not over a dozen have been discovered in this study, and four of these are still in process.

Except in so far as regional and other union catalogs include serials with all other kinds of publications, only one instance was revealed in which a card record was maintained of all the periodicals on file locally. This was in the Free Library of Philadelphia, where, under a plan sponsored by the Special Libraries Council of Philadelphia, the records for fifty-three local libraries are maintained in the periodical department. This offers an interesting example of co-operation between the public and the special libraries of a single community.

Of the remaining union lists, a majority cover books primarily, although some half-dozen are concerned with documents, several

* United States Library of Congress, *Report of the Librarian of Congress*, 1936, pp. 47-53, Washington, D.C., 1936.

† Union Library Catalogue of Philadelphia Metropolitan Area, *Statement of Facts*, Philadelphia, 1937 (?), 4 pp.

‡ Wilson, M. F., "Cleveland's Union Catalog," *Library Journal*, vol. 61, pp. 801-2, Nov. 1, 1936.

§ Sheppard, F. A., "New Jersey Union Catalog," *N.J. Library Bulletin*, vol. 6, pp. 12-15, Nov., 1937.

with manuscripts and facsimiles, one with services, and one with abstracts and bibliographies.

TOOLS FOR CO-OPERATIVE DISTRIBUTION OF KNOWLEDGE.

In addition to the several kinds of tools for promoting library co-operation that have been described, there are in the United States certain types of directories and guides which, although not designed to assist co-operation, specifically between libraries, do aid greatly in the co-operative assembling and distribution of knowledge between the several forms of information gathering and research organizations. These tools extend the ability of the special library or information bureau to act as a clearing house of information, and should, therefore, receive mention in any discussion of the tools of co-operation in the United States.

When special libraries seek information that cannot be found within their own libraries or organizations, it is natural to turn first to other libraries. Often, however, the desired information is so specific in character, or so recently discovered or released, that it has not yet found its way into print. It is especially when there is little or nothing in print that will help in the solution of a specific problem or furnish certain definite facts that we turn to such general sources as associations, museums, foundations, research and service organizations, and to such individuals as editors, government officials, research workers, and other specialists in the pertinent field.

While the guides to such sources of information are far from adequate, there are many directories and classified or indexed lists of organizations and individuals that make information from authorities in certain fields reasonably accessible. It would be impossible in this paper to describe all or even the more important of such directories but a brief description of some of the sources with citations for a few typical directories may be acceptable.

Associations carry on many functions that make them potential sources of information. Trade associations frequently have statistical, research, legislative, industrial relations, marketing, and other departments, and the heads of these departments are usually rather well informed in their special fields. Operating information, prevailing policies and practices, and statistics are often assembled from members on a confidential basis. No information about an individual member is given out, but total figures, ratios, and averages, as well as surveys of prevailing practice, are obtainable through such association action when they cannot be discovered otherwise. Most association officers, especially those whose membership is active in business, science, technology, and the social sciences, know who are authorities in the several aspects of their subjects and who are doing pioneer work, as well as what research projects and investigations are in process.

While there is no one guide to all kinds of associations, there is a great variety of directories or lists of associations in specific fields. Obviously the tools of this type that give, in addition to name, address, and officers, a summary statement of activities carried on by each association, and have a subject index, are of the greatest value in determining which organization to apply to for assistance on a specific problem. Some of these directories give a list of the associations' publications, the journals they sponsor, and a brief history of their

undertakings. A few state whether a library is maintained. An excellent example of such a directory in the scientific and technical field has been published by the National Research Council and has been through several editions.* The Public Administration Clearing House † issues an annual directory for its field which has a broad coverage. Another annual in this group is published by the Russell Sage Foundation.‡ Most trade directories list the associations in their industries, and the Trade Association Bureau of the Special Libraries Association has compiled and published a finding list of trade association directories.§ Professional directories likewise report on the associations active in the fields they cover and many year books supply similar facts on the co-operative and organizational activities of the groups they represent.

Museums are important sources of information on certain subjects because they have staff experts in many sciences, the fine arts, and occasionally in other subjects. The American Association of Museums has compiled and published a handbook || which serves as a guide to the interests of each museum.

Foundations, through their research programs, in which both permanent and special staff members participate, not only contribute to the results of co-operative research which could not be financed otherwise, but willingly co-operate with libraries in supplying information which they have assembled in connection with their research activities but have not yet published. The standard source of factual data on the foundations in the United States, now in its third edition, is prepared by the Russell Sage Foundation.¶

"Service" organizations are used especially by business corporations to obtain, as quickly as may be, current information that is subject to frequent and irregular change, or to obtain advice on certain complex problems. These organizations must of necessity assemble much information from widely scattered sources and employ specialists to organize and interpret it for the benefit of their clients or subscribers. As this type of organization is the subject of another paper at this conference it is not necessary to comment on it further, except to mention the several directories of services published by the Special Libraries Association in 1924** and 1931,†† and the third edition, now in process of compilation. One tool directly aiding library co-operation in this field is the *Union List of Services in Thirty-four Libraries in Manhattan*,‡‡ which lists for each of 118 well-known services the libraries subscribing to it in the Manhattan section or Borough of

* C. Hull, *Handbook of Scientific and Technical Societies and Institutions in the United States and Canada*, Washington, D.C., 3rd ed., National Research Council, 1937, 283 pp.

† *Organizations in the Field of Public Administration; a Directory*, Chicago, Ill., annual.

‡ *Social Work Year Book*, New York: Russell Sage Foundation, annual, Part II, "Directories of Agencies."

§ *Trade Associations in the United States*, New York, 1934, 20 pp.

|| *Handbook of American Museums*, Washington, D.C., 1932, 77 pp.

¶ *American Foundations*, New York: Russell Sage Foundation, 1938, 66 pp.

** *Handbook of Commercial Information Services*, Washington, D.C., 1924, 96 pp.

†† *Handbook of Commercial and Financial Services*, Providence, R.I., 1931, 95 pp.; *First Supplement*, New York, 1932, 17 pp.

‡‡ M. M. Kehl, comp., New York: Special Libraries Association, 1934, 12 pp. mimeographed.

New York City, where the greatest number of special libraries is concentrated.

Government officials are important sources of specialized information as individuals as well as authors. The vast amount of data assembled as a by-product of regulatory activities of governments can be tapped, if the proper official is discovered. In addition, there is much more information assembled in federal, state, and municipal offices than ever finds its way into print, and even the bulk of knowledge that is eventually printed has been available in the office assembling it for many months, or in some cases several years, before publication. There is a great variety of directories listing officials carrying on different activities, and there are also some more general guides. The most valuable of these are listed in the several publications by J. K. Wilcox.* The United States Central Statistical Board's *Directory of Federal Statistical Agencies*,† and currently the *Journal of the American Statistical Association*‡ in its "Notes" on new research projects are other valuable guides.

Doctoral dissertations and research projects similarly may not be published until long after work on them is under way, and all too often are not published at all. Moreover, during the period of investigation, the authors may have assembled data which would be invaluable to the clientele of special libraries and which they would gladly release to aid in the solution of problems of importance, if asked. The annual list compiled by D. B. Gilchrist § for the past four years is a welcome addition to many other partial lists, by university and by subject, of dissertations in progress. Lists of theses are printed regularly by certain of the more scholarly journals, notably the *American Economic Review*, *Journal of Education Research*,¶ the *American Journal of Sociology*** and the *Journal of Chemical Education*,†† to mention a few of those carrying such lists over a period of years. Additional sources for lists of dissertations are given by Palfrey in his valuable bibliography.‡‡

Staff specialists in research organizations and corporations and members of university faculties are sometimes consulted on non-confidential subjects for answers to questions that are not found in print and can be obtained only from the specialist or authority who is able to draw reliable conclusions or make positive statement from a wealth of knowledge or experience in a particular field. In tracing individuals who are so qualified in particular subjects, membership lists and year books of the appropriate professional, trade, or other associations, may be found in *Association Membership Lists*.§§ The

* *United States Reference Publications*, Boston: Faxon, 1931, 96 pp.; and 1932 Supplement; "Recent Aids to Public Document Use," *Special Libraries*, Vol. 29, Nos. 6-7, July-August, and September, 1938.

† Washington, D.C., 1935, 85 pp.

‡ Washington, D.C., quarterly.

§ *Doctoral Dissertations Accepted by American Universities*, New York: Wilson, annual.

¶ Menasha, Wis., quarterly.

§ Bloomington, Ill., monthly.

** Chicago, Ill., bi-monthly.

†† Easton, Pa., monthly.

‡‡ Thomas R. Palfrey and Henry E. Coleman, Jr., *Guide to Bibliographies of Theses, United States and Canada*, American Library Association, Chicago, 1936, 48 pp.

§§ Mary E. Jameson, New York: Special Libraries Association, 1934, 39 pp.

directory of *Industrial Research Laboratories of the United States** and directories of specific trades, which exist in great numbers, are also useful. The most recent list of such directories was published by the Special Libraries Association.† University handbooks and faculty lists that give titles of publications written and research carried on by members of the faculty serve as tools in finding academic authorities.

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* C. J. West and C. Hull, Washington, D.C.: National Research Council, Bulletin No. 91, 1933, 233 pp.

† Laura A. Eales, comp., *Directories for the Business Man*, New York, 1938, 66 pp.

Aids to Library Co-operation in the British Isles.

By LUXMOORE NEWCOMBE, T.D., M.A., LIT.D., F.L.A.

As we are meeting in Oxford it may not be out of place to introduce this paper by a reference to what was, possibly, the earliest attempt to provide an aid to library co-operation in the British Isles. In 1652 Dr. Gerard Langbaine, Provost of Queen's College, Oxford, wrote to John Selden :

"I have engaged a matter of a score of our ablest men of that kind, to undertake a thorough survey of our Publick Library [that is the Bodleian Library], intending to make a perfect catalogue of all the books according to their severall subjects in severall kinds ; and when that's done to incorporate in it all the Authors in any of our private College libraries, which are wanting in the publick, so that he that desires to know, may see at one view, what we have upon any one subject."

But it was not until 1929 that serious work was begun on a union catalogue of books published before 1641 in Oxford libraries other than the Bodleian.

It is not the object of this paper to describe in detail the system of library co-operation in which almost every library in the British Isles is taking an active part, but it is necessary that this system should be outlined in order that those unfamiliar with British libraries may appreciate the problems facing those who are attempting to provide aids to co-operation.

The whole of England and Wales is covered by a series of nine Regional Library Systems. It is expected that a similar system will be established in Scotland in the near future. A Regional System is one in which all the libraries (public, university, and special) in a convenient group of neighbouring counties undertake to lend books to one another, the books so lent being of a type which the borrowing library could not reasonably be expected to buy for itself. Each Region has a Bureau (housed in one of the principal libraries in the area) at which a union catalogue of all the non-fiction books in the libraries in the Region is being compiled. Acting as a centre for the co-ordination of all the Regions and of all other forms of library co-operation in the British Isles, and between British libraries and foreign libraries, is the National Central Library.

A summary of the way in which a reader obtains a book through the national library service may give a useful idea of the procedure followed :

1. The reader asks his "local" library for the book he wants. His local library may be an urban library, a county library, a university library, a special library, or the library of a learned institution of which he is a member.
2. If the local library does not possess a copy of the book, and is not able to buy one, the librarian fills in an application form and sends it to his Regional Bureau. If the local library is not a

member of a Regional System, the form is sent direct to the National Central Library, or in the case of Scotland and Ireland, to the Scottish Central Library for Students, or the Irish Central Library for Students respectively.

3. On receipt of the application form the staff at the Regional Bureau look the book up in their union catalogue, and if a copy is shown as being in any library in the regional area the application form is sent to that library, and the book is forwarded direct to the borrowing library, or, in the case of a county library, to the reader's home address.
4. If no copy of the book is entered in the regional union catalogue the application form is sent by the Bureau staff to the National Central Library.
5. The National Central Library tries to supply the book in one of the following ways :
 - (a) From its own shelves ;
 - (b) By buying a copy ;
 - (c) By borrowing a copy from one of the group of special libraries, known as outlier libraries, which undertake to lend their books through the agency of the National Central Library ;
 - (d) By obtaining a copy through one of the other Regional Bureaux ;
 - (e) In exceptional cases, by borrowing a copy from a foreign library through the appropriate national centre.

The approximate number of books available through the National Central Library, apart from those which may be obtained from foreign libraries, is as follows :

National Central Library's own stock	 150,000
Outlier Libraries	 4,047,000
Libraries in the Regional Systems	 10,230,000
University Libraries	 6,800,000
Total	 <u>21,227,000</u>

Now we will deal with the real subject of the paper and see what aids exist to enable the staffs of the National Central Library and the Regional Bureaux to mobilise this vast number of books, housed in nearly 700 different libraries.

First there are the various union catalogues,* the greatest of which is the rapidly growing National Union Catalogue housed in the National Central Library. This catalogue at present consists of 2,275,000 entries of books in the Regional Systems, excluding Yorkshire and Wales. In Wales the union catalogue, which already contains 597,000 entries, is housed in the National Library of Wales and in the Sub-Bureau at Cardiff.

We might usefully consider a few general points which apply to all the union catalogues in the British Isles. The word "catalogue" is not

* Details of the compilation, cost, and value of the union catalogues in the British Isles are given in a paper on pages 65 to 75 of the *Report of the Thirteenth Conference of ASLIB*, 1936.

altogether a satisfactory one ; " finding list " would better describe these great sources of information, their chief function being, not to give detailed bibliographical information, but to enable the staffs of the National Central Library and the Regional Bureaux to find out where books are. All the union catalogues, or finding lists, contain author entries only ; no attempt being made to provide anything in the nature of subject indexes. Such a task would be tremendous and to be done efficiently would necessitate access to the books themselves and not merely to entries in catalogues. The entries are for non-fiction books only, an endeavour being made in each catalogue to include an entry for each such book in the libraries covered by the catalogue. The information given in most of the catalogues is limited to such essential information as (1) the full name of the author ; (2) brief title of book ; (3) number of the edition if not the first ; (4) place of publication ; and (5) date. Some of the catalogues also include the name of the editor or translator, if any.

The method of building up the National Union Catalogue (other than the London section, which will be dealt with later) is as economical in labour and material as it is possible for such a catalogue to be. At each Regional Bureau (except the Yorkshire one) a union catalogue of all the non-fiction books is being compiled on 8in. by 4in. paper sheets which are kept in binders. Four copies of each entry are made, one original copy and three carbons. The original copy is kept at the Bureau and forms the Regional Union Catalogue. The first carbon copy, which is on a different coloured sheet in each region, is sent to the National Central Library, where the sheets are sorted into one alphabetical order. The other two carbon copies are circulated, in two groups, among the libraries in the regional area. On receipt of a batch of entries a library checks them with its own catalogue and puts a cross in the square containing the number representing the library. The sheets are then sent on to the next library in the circuit and eventually work their way back to the Regional Bureau, where the information is copied on to the Bureau copy of the catalogue. Any books which are not already represented in the circulated sheets are entered by each library on a smaller (5in. by 3in.) sheet, which is sent direct to the Bureau. This information also is incorporated in the Bureau and the National Central Library copies.

The other section of the National Union Catalogue consists of entries on 5in. by 3in. cards for the books in the thirty London Borough Libraries (including the Guildhall Library and the Minet Library). On the lower half of the cards are a number of abbreviations representing the thirty libraries. The libraries possessing a copy of the book catalogued are indicated by underlining in ink the appropriate abbreviation.

In addition to the National Union Catalogue, the National Central Library is compiling on cards a union catalogue of the books in the important group of special libraries (known as Outlier Libraries) which undertake to lend their books to other libraries through the agency of the National Central Library. The cards used in the Outlier Union Catalogue contain no printed matter, the location of the book being shown by appropriate letters at the top right-hand corner. For instance, S.L. shows that the book is in the Science Library, S.A. in the Society of Antiquaries, and so on. Most of the entries in

this catalogue are supplied by some of the Outlier Libraries and consist largely of copies of accession cards. The catalogue also contains an entry—made by the staff of the National Central Library—for each book located by the Library for which there is not already an entry in one of the union catalogues. These entries are most useful if the same book is asked for again. So far, the staff of the National Central Library have been able to do little to build up this catalogue, which, as a result, contains only about 180,000 entries for the four million volumes in the 128 Outlier Libraries.

Although the National and Outlier Union Catalogues are still in their infancy and record only 11.56 per cent of the twenty-one and a quarter million books available, they are of great value as a means of tracing copies of books needed with little delay and the minimum of staff time. What makes these catalogues of special value is the large proportion of single copies of scarce books and periodicals recorded in them.

In the above paragraphs an outline is given of the card and sheaf union catalogues available at the National Central Library and at the National Library of Wales. Apart from printed union catalogues (which will be dealt with later) there are a number of manuscript, typed, or cyclostyled union catalogues in other parts of the country, each of which is a valuable aid to co-operation. These catalogues include :*

- (a) The Oxford inter-collegiate catalogue of books printed before 1641, compiled by G. R. Driver and S. Gibson. The method of compilation is to have the required entries typed from the college catalogue in two copies, one being retained by the college and the other cut up, mounted on cards, and made accessible in the Bodleian Library. By the end of 1935 nearly all the entries had been received, the total number being over 70,000. It is probable that when this material is fully edited the catalogue will be printed.
- (b) The Cambridge inter-collegiate catalogue of books printed abroad, excluding books in English, from 1501 to 1600, which is being compiled by H. M. Adams. So far entries from five colleges have been incorporated. It is estimated that the total number of entries will be about 30,000, and it is hoped that the catalogue will be published.
- (c) A union catalogue of books on Scottish local history, consisting at present of about 4,000 entries supplied by the librarians of seventeen of the thirty county libraries in Scotland. The catalogue, which is housed at the Scottish Central Library for Students, is now arranged under authors' names, but it is hoped that when it is more complete it will have additional entries under places and under subjects.
- (d) A union index of architectural drawings, engravings, etc. (not photographs or illustrations in books), of English buildings erected before 1830, which is being compiled by the Architectural Graphic Records Committee. This index, which is housed

* A list of British union catalogues is given on pages 172 to 176 of L. Newcombe's *Library Co-operation in the British Isles*, 1937.

in the Library of the Royal Institute of British Architects, is on cards, which are arranged topographically. This index now contains over 30,000 entries for drawings in fifty libraries, art galleries, and museums.

- (e) A cyclostyled list, issued by the Sheffield Public Libraries, which, with additions issued from time to time, contains entries for many hundred periodicals in the principal libraries in Sheffield.
- (f) A cyclostyled list compiled by K. Povey of the current periodicals and serials in the libraries of Belfast. The latest edition, issued in 1937, contains entries for about 1,370 periodicals in twenty-seven libraries.
- (g) A cyclostyled list of technical, scientific, and commercial periodicals in nine libraries in Manchester. This list was compiled by the Lancashire and Cheshire Branch of ASLIB.

The National Central Library has copies of lists (e), (f), and (g).

Oxford is responsible for what appears to be the earliest printed union catalogue: the *Provisional catalogue of transactions of societies, periodicals, and memoirs available for the use of professors and of students*, compiled by H. W. Acland, issued by the Radcliffe Library in 1866. This catalogue is a union catalogue to a limited extent only, as it gives locations in only three rather closely associated libraries: the Radcliffe, the Bodleian, and that of the Ashmolean Society. The first edition contains entries for about 320 periodicals, and the fourth, and last, edition published in 1887, contains about 1,200 entries. In the preface to the second edition it is stated that the Radcliffe Library "has been used by persons of either sex, by residents in the city and in the county, as well as by members of the university": an interesting early example of a broad-minded library policy.

The most important recent printed catalogues are:

- (a) *A short-title catalogue of books printed in England, Scotland, and Ireland, and of English books printed abroad, 1475-1640*. Compiled by A. W. Pollard and G. R. Redgrave, 1926. This catalogue contains entries for 26,143 books, with locations in 153 libraries and private collections, mostly in the British Isles, but a few in the United States of America. The aim of the catalogue is to give abridged entries of all books, printed before 1641, in whatever language, printed in England, Wales, Scotland, and Ireland, and all books in English wherever printed, also Latin service-books, wherever printed, if for use in England and Scotland, copies of which exist at the British Museum, the Bodleian, the Cambridge University Library, and the Henry E. Huntington Library, California, supplemented by additions from nearly 150 other collections.
- (b) *A world list of scientific periodicals published in the years 1900-1933*. Second edition, 1934. This list is one of the first importance to scientists and librarians. It contains entries for 24,029 sets of periodicals published during the years 1900-1933. Location references are given to 44 libraries in London and 143 in the provinces, a total of 187.

- (c) *Union catalogue of the periodical publications in the university libraries of the British Isles*. Compiled on behalf of the Joint Standing Committee on Library Co-operation, 1937. This catalogue contains a list of all the periodicals, irrespective of date or subject, in all the university libraries, with the exception of those already included in the *World list of scientific periodicals*. 23,115 different periodicals are included, with details of the holdings of 110 libraries and fairly full bibliographical details. Including cross-references the total number of entries is about 55,000.
- (d) Royal Society of London. *Catalogue of scientific papers 1800 to 1900. Subject Index*. Vols. 1-3, 1908-14. Each volume has a list of from 700 to 1,261 periodicals with locations in from twenty-four to thirty British libraries.
- (e) JAGGARD (W.). *Shakespeare bibliography*, 1911. Gives locations in twenty-one libraries in the British Isles and in seven foreign libraries.
- (f) DUFF (E. G.). *Fifteenth century English books*, 1917. Gives locations in many British libraries and private collections.
- (g) *Gesamtkatalog der Wiegendrucke*, 1925, etc. This catalogue of books printed before the year 1500 contains location references to several hundred libraries throughout the world, including many in the British Isles.

So far this paper has dealt mainly with union catalogues. There are, however, many other aids to co-operation which are of equal importance to the staff of the National Central Library, especially in connection with enquiries of a bibliographical nature. Among the more important aids of this kind are the various printed catalogues of Outlier Libraries, especially the *London Bibliography of the Social Sciences*, which catalogues the books in the London School of Economics and nine other libraries in London, and the catalogue of the Royal Empire Society. Other most useful catalogues are the British Museum catalogue of printed books, the catalogue of the books in the Natural History Museum, the catalogue of the London Library, the Edinburgh University Library catalogue, and for older books the catalogue of the John Rylands Library. Other books which are in frequent use are the *ASLIB Directory*,* R. A. Rye's *Guide to the Libraries of London*, the British Museum Subject Index, *The English Catalogue of Books*, and *The United States Catalog*, the latter being of special importance not only as a means of supplying information about American books, but also because it contains details of many English books which are not included in the *English Catalogue*. Much helpful information about German and French books is obtained from the *Deutscher Gesamtkatalog* and the catalogue of the Bibliothèque Nationale. For information about German books the *Deutsches Bücherverzeichnis* is of great value.

An aid of the first importance as a means of supplying information about American books is the recently established Bureau of American Bibliography at the National Central Library, made possible by a generous grant from the Rockefeller Foundation. This Bureau contains a complete set of the Library of Congress cards (the only set in the

* Copies of this most useful book may still be obtained from ASLIB, price 10s. 6d.

British Isles), generously presented by the Library of Congress, and all the important American catalogues and bibliographies.

This concludes an outline of the principal aids to library co-operation in the British Isles. The greatest aid of all, however, is the friendly voluntary co-operation between the authorities and the librarians of all types of libraries. Without this, and without the help always so readily given by all concerned, the national system of library co-operation would be impossible. The union catalogues at the National Central Library are author catalogues only, so the staff have to supplement the information they can obtain from printed and other bibliographies by reference to the librarians of special libraries and others with a specialised knowledge of their subject. These specialists, with their up-to-date knowledge and ability to evaluate the literature of their subject, represent another aid the value of which cannot be overestimated. Finally, acknowledgment must be made of all the Carnegie United Kingdom Trustees have done to promote library co-operation by giving grants which have reached an aggregate of nearly £250,000.

Summaries of Papers contributed to the Symposium on "Tools for Library Co-operation."

[Note : These papers are printed in full in the *Transactions* of the Fourteenth International Conference on Documentation.]

General List of French Official Publications.

By JULIEN CAIN (in French).

The World Conference on Documentation at Paris in 1937 approved the resolution that each country, not already so provided, should have a centralised service for the sale and listing of official publications. The author sketches the history of the French efforts in this direction. The list of French official publications which is shortly to be issued is the direct outcome of the appointment, on the initiative of M. Bonnet, of the *Commission des Publications Administratives* in June, 1937. On the recommendation of this body, the Government authorised that the National Library of Paris should collaborate with the Centre de Documentation Général, (formerly the Centre d'Information Economique), to make a census of official publications and also recommended participation in the scheme by the heads of the various departments.

The List will be issued yearly at present, the first section, covering the publications for the year 1937, being due to appear in 1938. The list of the 1938 publications will be edited in 1939 and so on, while at the same time a list of earlier publications will be put in hand. The contents will be arranged according to the Departments issuing the publications, but alphabetical indexes for titles, authors, and subjects will be included.

Standardisation and Documentation in Germany.

By DR. OTTO FRANK (in German).

The centre of co-operative German work on documentation is a committee of the German Standards Institute (der Fachnormenausschuss für Bibliotheks-, Buch- und Zeitschriftenwesen im Deutschen Normenausschuss). The work of this committee is concisely outlined : general standardising activities ; exchange of experience ; framing of guiding principles for authors (style of production of publications), for alphabetical indexes, and for abstracting ; preparation of indexes in various fields of documentation, etc. A separate committee (Ausschuss für Klassifikation) is dealing with the production of the German edition (third international edition) of the U.D.C.

The German System of Exchange of Duplicates and its Extension to International Exchange.

BY DR. A. JÜRGENS (in German).

The German organisation for utilisation of duplicates (die Reichstauschstelle) is the only one in the world. The author first sketches the ordinary methods of exchange of duplicates (sale; exchange between libraries of the same country; exchange of lists) and their disadvantages. He then gives an account of the methods adopted by the Reichstauschstelle, which acts as a national clearing house for duplicates. Requests to this body rose from 1,000 in 1922 to 30,000 in 1937; in the latter year 61,666 volumes and 27,279 parts were supplied to the participating libraries. The Reichstauschstelle already works to some extent with other countries, and is prepared to increase this international aspect of its work.

National and International Standards in the Field of Libraries, Books and Journals.

BY DR. F. PRINZHORN (in German).

The bodies concerned in this branch of documentation are mentioned. The obstacles to international standardisation are illustrated by reference to various matters such as journal title abbreviations, format of journals, alphabetical arrangement (in card indexes, etc.) and so forth. The possibility of international agreement on alphabetical order of letter is adumbrated.

Standardisation of Abbreviations for Titles of Scientific Periodicals.

BY DR. WERNER RUST (in German).

Individual choice in abbreviations of titles for scientific periodicals often results in great confusion and difficulties; in many instances the abbreviations are such that they are not recognisable even by an expert in the subject covered by the journal. The author has been for a number of years engaged in the study of the subject, and has played a leading part in the efforts made in Germany to bring some order into this chaos. In 1930 the International Institute of International Co-operation accepted the suggestions of the German representatives, and issued them under the title "International Code of Abbreviations for Titles of Periodicals" (see also German standards DIN 1502 and 1505). With a view to persuading individuals in the various countries of the world to fall into line with any agreed practice, the author suggests that the I.F.D. should recognise the validity of the above-mentioned international code, and should form a committee to deal with the matter and report to the 1940 meeting of the I.F.D., which will take place in Germany.

The French International Exchange Service.

By J. CORDEY (in French).

The French International Exchange Service, for some time directly under the Ministry of Education, has since April, 1936, become attached to the Administration of the National Library.

As in other countries, the French service of exchanges is an organ of distribution. It sounds simple enough, but they are always coming across many complications. Two things stand out. Firstly, many nations fear the creation of a new administrative service and added expense. Secondly, and above all, they fear to commit themselves to the exchange of all their publications when in certain cases numerous and important scientific publications are edited and subsidised by governments as part of their services. Such an undertaking might become a heavy burden without adequate return.

The Commission of Intellectual Cooperation of the League of Nations invited the Governments non-signatory to the Brussels Convention to adhere to their terms, but many responded vaguely and some not at all, and so disorder continues to reign. A few suggestions follow :

1. The Commission of Intellectual Cooperation of the League of Nations, which has already delved into this question, or the International Institute of Intellectual Co-operation, might be asked to draw up a plan, independent of the Brussels Accord of 1886, that would have the basis of a simple organisation, official but not costly, limited to the transmission of publications exchanged between other countries. The obligation to exchange publications would be optional.
2. This organisation could be asked to collect all official texts relating to international exchanges and all documents that would help to clarify the situation.
3. This organisation might perhaps publish yearly an annual devoted essentially to the reports of each national service, statistics, and information that might be of interest to all.

DISCUSSION.

The chair was taken by DR. E. E. LOWE. In the ensuing discussion, referring to Mr. Donker Duyvis's explanations, MR. MATHYS pointed out that, a short time before, a register of the existing documentation offices had been edited in print in Switzerland, in which the libraries took an important part. The cooperation of the documentation offices was not complete, but it could be explained by the fact that there was still hesitation in giving information. But it is to be expected that a new edition of the register could be enlarged.

As to the exchange of literature, especially of reviews, Mr. Mathys said that an exchange within the libraries of the Swiss Confederative Administration was practised in the way of filling up mutual gaps and centralizing also of smaller stores of reviews from different libraries into a collection as complete as possible at one place. The use of them did not offer any difficulties. This practice had been suggested by the director of the Central Library of Zurich, Dr. Burckhardt, already some years ago.

MR. EDWARD J. CARTER reported that the ASLIB Council was shortly to consider the possibilities of publishing a new edition of the *ASLIB Directory*.

With reference to Mr. Donker Duyvis's remarks in his contribution to the Symposium on the difficulty of assuring adequate or even any response to enquiries from organisations noted in directories, Mr. Carter suggested that the compilers

of directories should elicit answers to the following questions from organisations included in the directories :

- (a) Are you prepared to answer enquiries from "all-comers" whether private individuals or organisations ?
- (b) If the answer to (a) is "No," are you prepared to answer enquiries addressed to you *via* another recognised information bureau or research organisation ?
- (c) If the answer to (a) and (b) is "No," do you act as an information bureau for your members ?

Mr. Carter suggested that if the answers to these questions could be recorded in directories, advice of incalculable use to intending enquirers would be afforded.

MR. D. R. R. BURT spoke as a scientific worker who felt the need of a service whereby scientific papers could be photographed and sent to institutions overseas. At present no such service exists apart from a photostat service which is costly, and scientific workers abroad must of necessity spend much of their time when on leave in making good in libraries in this country the deficiencies in the literature of their subject. As in all scientific work it is necessary for the original and not an abstract to be consulted, he considered that the inauguration of a central agency where microphotographs of original scientific papers could be produced was a necessity and recommended that the councils of F.I.D. and ASLIB used their influence in this direction.

Mr. Burt moved the Resolution which was carried : That this Conference recommends that the Councils of F.I.D. and ASLIB use their influence to further the inauguration of a central agency in the United Kingdom whereby original scientific papers can be photographed for scientific institutions abroad.

Investigating the British Press: How Material for the P E P Press Report was Compiled.

By MAX NICHOLSON.

P E P, or Political and Economic Planning, has to deal with a very wide range of problems of public affairs, and has worked out, partly by good luck and partly by good management, a fairly effective technique for dealing with them. This technique, as it has been applied to the recent P E P Report on the British Press, may be of some interest to members of ASLIB, many of whom no doubt can criticise it as experts. It is therefore to supply a basis for an exchange of ideas and experience on the assembly and use of certain types of information that this address is framed, much as I would like to talk of the shortcomings and merits of the British Press, of the reform of the law of libel, of intrusions into personal affairs, and of all the other Press questions on which we all hold views.

Some subjects, such as unemployment and the migration of birds, have had devoted to them not only a good deal of research and thought but a considerable number of fairly up-to-date books and other publications covering their main aspects. Other subjects, such as the working of price-fixing schemes and cartels, or the ownership of the land, are not covered by any up-to-date and comprehensive account so far as Great Britain is concerned. As technical civilisation develops the number and importance of these neglected subjects rapidly increases. The individual student finds it difficult to lay hands on adequate material for tackling great unexplored contemporary problems of public affairs and is tempted into easier fields of work. Government departments tend to leave such problems alone unless and until they lead to public outcry. Parliament and the Press skate over the surface of these subjects with a superficiality inevitable in view of the extent of other claims on their attention. The result is that any of us dealing with demands for information must often have to reply to the inquirer: "I know this question is important, but I cannot name any book or paper which really deals with it at all adequately. I can tell you of one or two people or institutions who perhaps take some interest in it and may be able to give you one or two scraps of information, but the chances are you will get nothing worth having because it is nobody's job to go into the matter. If you would turn your attention to some subject of less importance, preferably touching the fairly remote past, I could probably put you on to several excellent works on it, the fruit of able and prolonged study, but if you insist on concerning yourself with big contemporary problems I cannot help you."

Since the early days of P E P it has seemed to us that this extraordinary famine of thought and information about some of the main activities of civilisation urgently needed remedy. We have set ourselves, therefore, to create a body of men and women able and willing in their spare time to analyse the workings of different industries and services, and their impacts upon the public, in order to give democracy some

of the accurate, objective, accessible, and condensed information necessary for its proper working.

The Report on the British Press, published last April, is the eleventh issued by P E P, which has also published up to date 130 numbers of the fortnightly *Planning* broadsheet. While the Press Report is not in every way typical, it illustrates very clearly the problems inherent in group study of a subject on which written material is sparse, largely concerned with limited aspects, and frequently out of date.

The formation of a Press Group, which had long been contemplated, was decided upon at an Executive Committee meeting of April 11, 1934, and instructions were given for the staff to draw up a preliminary synopsis, which was circulated for comment to members interested. As a result of these comments it was found practicable to start a group. This was done on May 1, 1935, the only instruction to the group from the Executive being that it should start by making a preliminary factual survey of the Press as an industry—in other words, it should not plunge into the more subjective aspects of the problem before examining those in which some approach to exact measurement could be made.

Before the first meeting it was necessary to decide who should form the group. In the early days of *Planning* P E P had had a Publicity Committee composed of members with special knowledge of the Press, broadcasting, and public relations, and this Committee, which had worked very well, supplied four members of the new group, including the chairman. Two members of other P E P groups and one member of the P E P Club who had special knowledge of the Press asked to join the new group and were added. An economist and a leader-writer of a national newspaper who were personally very interested in the subject were invited. Examination of the qualifications represented showed that the group was so far too much dominated by journalists, and a broadcast news editor, a circulation man, and an advertising agency executive were selected to redress the balance. Thus the group was launched with a dozen members, of whom no less than ten continued to serve throughout, the other two resigning, not owing to any disagreement, but to circumstances which made their attendance at meetings impossible. On the whole the Press group was by P E P standards if anything too expert, in the sense that almost all its members belonged or had belonged to the industry under discussion, but at the outset only four out of the twelve were actually working journalists, and only five were whole-time employees of newspapers.

The greatest difficulty at this stage was to find a member able and willing to act as drafter, and this question had to be left in abeyance, members of the group volunteering each to prepare drafts on subjects allotted to them. Thus the burden of collecting material was shared among members of the group, several of whom had, owing to the nature of the jobs, opportunities which no academic inquirer would have enjoyed.

At the same time available publications were used as far as they went. The initial document of the group contained five pages in which the importance of the Press as an industry and its comparative position among British industries were analysed largely on the basis of the Census of Population and the Census of Production. This

analysis, considerably modified and expanded, was used in the opening pages of Chapters I and V of the eventual Report, and it is significant that some of these elementary figures, so readily accessible to workers familiar with official statistics, were widely quoted as new and surprising revelations about the importance of the Press. The rest of the initial document outlined the main problems known to exist under the broad headings of Government and the Press (including (a) constitutional and legal relations, (b) political relations, and (c) administrative relations), Control of the Press, and Personnel of the Press. Various lines were suggested, such as, for instance, considering the ownership and finance of the Press, with special reference to the effects of post-war amalgamations and refinancing, the extreme and average size of holdings, and the extent to which financial control or influence does in fact dictate or modify policy.

At the group's first meeting it was agreed to meet fortnightly and that the first task should be to analyse from what standpoints the selection of news and opinion which actually appears is made, the influences at work being divided broadly into direct, such as proprietors and editors, and indirect, such as advertising considerations and reader criticism. A three-page agenda was therefore prepared for the next meeting, with notes on the leading direct and indirect influences and the way in which they might operate. Members were asked to consider these and to come prepared to criticise the suggestions. The group added one further influence which had been left out, and discussed fairly fully the position of the proprietor. As a result of having on the group members in positions of responsibility for policy it at once emerged that there were different types of treatment of news and opinion—one type being concerned with policy on big questions of the day, another with handling of news regarded by the editorial staff as opinion-forming, and a third with the handling of news which is left to be treated purely on its news or entertainment value. Much also depended on the actual route followed by news, and whether on arrival at the News Editor's bottleneck it was passed to the "subs." or to a reporter.

This discussion brought out not only the need for further information but the exact nature of the information needed and the critical points to be tested. To quote the concluding paragraph of the minutes of the meeting :

It was agreed that a fuller factual analysis was needed on two aspects :

- (a) finance and ownership ;
- (b) the making and processing of news.

As regards (a), Mr. A undertook to bring up to date the type balance-sheet of a penny daily which had appeared in the *Economist* for 17/11/28, and Mr. B to try to get out information on the actual proprietorship of a number of leading newspapers.

As regards (b), Messrs. C, D, and E undertook to put down an outline of the process of news gathering and news handling stage by stage as it appeared to them from their own experience, with a view to arriving at a composite picture of the origin and various steps in the handling of news at the next meeting. It was hoped that this analysis would help to check and define the extent of the various influences already listed.

(For publication purposes P E P anonymity makes it necessary to substitute letters for the actual names of members.)

Thus within a fortnight of starting work the group had been able to put its finger not only on the elementary statistics of the industry which Pressmen might easily have overlooked, but upon the nerve centres through which news and opinion might be influenced, which a lay investigator might have taken some time to locate.

The third meeting of the group, still in May 1935, had before it no less than five different documents by group members, not on P E P staff. Two of these, dealing with the finance and the ownership of the Press, already contained the germs of Chapters III and IV of the Report, the first consisting of three pages of type accounts of hypothetical newspapers by the circulation specialist, and the second of four pages summarising newspaper chains and ownership by the group's economist. Both these documents were deferred till later meetings and after very full discussion were much amplified and amended. Two more of the sets of notes described the actual routes and methods of handling news, one in a popular and the other on a "class" newspaper. Both these were prepared by group members who had actually worked on this job quite recently and were in a position to check their observations daily, and they formed the nucleus of Chapter VI of the Press Report, again with much modification and expansion. The same meeting had before it an attempt, made by a member off his own bat, to measure the actual space and treatment allotted to news of different types in a national newspaper in the previous week. The method was explained and criticised and the member concerned—a working journalist—agreed to apply the same method, as revised, to other newspapers for the same period. Another member volunteered to do the same for broadcast news.

The next three meetings were devoted to considering more fully the documents already before the group, together with enlarged statistical analyses of news treatment, and were followed by a meeting devoted to advertising expenditure, at which the group had the advantage of confidential figures made available to it from within the industry and explained by a member specially qualified in that field.

The group at this stage adjourned for two months, until September, and when it met again considered a draft for a broadsheet on the State of the Press, which was revised and passed and issued as No. 58 of *Planning*. The ninth meeting in October had before it some useful criticisms and suggestions received as a result of the broadsheet, but when the next stage of the group's work was discussed no clear acceptable programme emerged. The group seemed to have lost its initial impetus and to need a fresh objective for its inquiries. Members were therefore asked to send in written suggestions for a further programme of study of "What's Wrong with the Press," the main headings being :

- (a) Definition of the present weaknesses and shortcomings of the Press ;
- (b) Examination of possible methods for dealing with these weaknesses and shortcomings, showing the arguments for and against each ;
- (c) Agreement upon and drafting of the group's final recommendations.

Examination of the group documents showed that weaknesses already brought to light could be roughly listed under the headings of service to readers, public affairs, government, legal, circulation, advertisement, finance, personnel, and structure. Brief notes were therefore got out in the P E P office on these aspects and the group decided to examine factually the weaknesses as regards circulation policy, advertising, finance, and personnel. Four members promised to prepare drafts—two of them joint drafts—upon three of these subjects, and the group's eleventh meeting a fortnight later actually had two of these drafts before it, one being a five-page document entitled "Notes on Personnel, Recruitment, etc.," and another, a shorter note, on Trade Union Organisation and Wages. These were considered together, but the discussion on the second quickly led to consideration of the actual jobs done both in production and distribution. Here the writer of the memorandum, being daily concerned with circulation management, brought out in reply to questions a situation which to him was commonplace but was unfamiliar to most other members of the group—explaining how street sellers get their pitches, their supplies, and their commission, using a local pub as their office, how compositors divide the "fat" among themselves, how newspaper trains are run, and how general election results are got into editions of London newspapers for remote areas. This material was later supplemented and overhauled very considerably, but the essential clues all came out at the meeting.

The next meeting discussed the status and organisation of journalists, and was followed by another at which the group had before it joint notes by two members, one a civil servant and another a B.B.C. official, on the scope of contacts between Government and the Press. Discussion showed that several criticisms of the civil service attitude were strongly maintained, and it was decided to invite the public relations officer of a leading Ministry to come to the next meeting and put his point of view. This was done at the fourteenth and last meeting of the group during 1935, and frank discussion brought out partial justification of the official view.

The first job in 1936 was the circulation by a group member of a long and searching questionnaire to his publicity and newspaper contacts on the delicate subject of advertising influence. Answers naturally were limited in number but were very helpful, one of them providing the group with the notice from a national newspaper office quoted in the Report:

MEMO TO SUB-EDITORS.—Don't pass anything detrimental to *Bread*. To say that bread is fattening, for instance, is detrimental.

This, again, was the sort of material which could only be secured by the collaboration of a considerable number of people having daily business behind the scenes in the Press, and it will be noticed that the direct experience of the dozen people on the group was being increasingly supplemented by obtaining evidence from others with better opportunities in regard to particular points. At this point also the group was inevitably reaching the stage where subjects less capable of exact measurement and more open to bias were coming to the fore, and the seeking of outside views was intended to counteract any unjustified assumptions that the group itself might hold. The

group gave three meetings to more or less animated discussion of advertising influences, and then gave instructions for a résumé of the conclusions to be prepared by the P E P office. This having been done, the next meeting returned to the subject and considerably amended the draft. Renewed discussion brought out the fact that advertising influence was particularly clearly visible on the City page, and a leading City Editor was therefore invited to give evidence, which he did with great frankness and illumination to the group. Here, again, preconceived ideas had to give way before the weight of many cases and day-to-day experience. About the same time the group began to consider in detail the practical effects of legal restrictions, and after a meeting devoted to this subject the chief legal adviser of one of the largest newspaper undertakings came and gave evidence, which was carefully recorded and verified by him afterwards.

The group had now been working a year, and it would be wearisome to follow in equal detail the later stages in the building up of its report, after having outlined the general methods of work. A lunch meeting at the P E P Club was at this stage addressed by the chairman of the group, and other members of P E P were thus enabled to criticise the group's approach, both in the discussion and by written comments raising such points as intrusion into private affairs. A member of P E P staff was also made available to draft the section of the Report on legal restrictions, and this involved considerable research on legal points which the group had not studied. Several meetings were devoted to discussing the practical implications of legal restrictions, and it was found necessary to call in a leading libel risk underwriter, who kindly carried out for the group an analysis of current claims for libel damages—the best means of getting reliable information, as such claims naturally reach the underwriter although the great majority never reach the courts. This analysis was independently checked from two sources. The point about intrusion into private grief, raised by members of other P E P groups, was also carefully considered, and two meetings were given to examining the effect of various circulation levels on the size of a newspaper and its profitability on different assumptions. The group now, after eighteen months' work, began to consider its proposals, and a synopsis of the Report was prepared. There were, however, many important aspects which had not been considered in detail, such as the role of news agencies, and the provincial and trade Press. Evidence on these had to be obtained partly at group meetings and partly, in order to expedite the Report, by outside interviews.

At the same time a member of the staff of P E P was attached to the group to draft the material into a report, which often meant not only verifying general statements made in the discussion, but also undertaking substantial research into matters on which no member of the group could supply authentic information. 1937 was devoted to preparing, considering, and revising draft chapters, filling the many gaps which came to light, and considering the wider aspects of the Press as a social organ. In order to keep abreast of this task the group was forced to meet weekly and even to resort to the unheard-of expedient of continuing to sit until the middle of August. As the draft grew, more and more suggestions poured in for its further expansion, and more and more gaps became apparent. The preparation

of the Report became a hectic affair, but the thought and care which had gone into the early stages enabled decisions to be taken rapidly without undue risk. It was only at this stage that a considerable number of organisations and outside experts connected with the Press could be given drafts or proofs in a form fit for them to read connectedly, and very valuable revision was achieved as a result of the extraordinary amount of trouble which many of those consulted took.

Altogether the group held eighty-one full meetings, apart from a few sub-committees used for such tasks as preparing an agenda of proposals. This was more than the usual number of meetings required for a P E P Report, the excess being partly due to the fact that the journalists could only meet at lunch, when time for discussion is inevitably shorter than in the evening, and partly to the very large number of aspects on which very thorough group examination was necessary to eliminate so far as possible the more obvious pitfalls of bias. As a rough generalisation, the more a subject lends itself to measurement by objective tests the more readily a group can confine itself to seeing that the work is objectively done by a drafter, while the more a subject is entangled in the attitudes and experience of those dealing with it, the more important the role of a group becomes not only in assessing the material, but in obtaining and shaping it. The Press Report is open to many criticisms and P E P welcomes them, but whatever may be thought of it, I feel sure that members of ASLIB will appreciate the difficulty of obtaining and making usefully available material on such an unexplored and controversial subject, and I hope that this brief account of how we set about the task may stimulate a helpful discussion among those who also have an interest in making available neglected experience and buried resources of information.

To sum up, with this type of problem the book written by an individual is at a great disadvantage compared with the group report, partly because the range of specialised subjects to be covered is so extensive and each is so rapidly changing, and partly because so much of the value of the result depends upon judgment used in assessing many intangible factors, which judgment can be provided with greater balance and experience through a well-chosen group representing varied experience of the subject than by any ordinary individual. Even a group working entirely through a single drafter could not convey the different atmosphere of the different activities nearly so well as a group several of whose members are accustomed to drafting and willing to do the initial memoranda on their respective subjects. The function of the staff drafter remains, of course, of immense importance, and it is perhaps not altogether satisfactory only to give the group a drafter when it has been working for a long time, as was done in this case on account of the claims of other P E P Reports. This procedure, at any rate, removes any temptation for the group to leave the drafter to do its thinking for it, and compels every member to go through a healthy self-examination, followed, when his draft is considered, by a "mixed grill" from the other members, whose approach is often startlingly different. One of the most striking things emerging in group work of this kind is the amount of essential information which individual specialists carry in their heads without being in the least conscious of its wider significance, until well-directed discussion brings this out. One of the main tasks of a P E P Report is to

find the people who possess such knowledge and to make it available, for although P E P is often described as a research body we confine first-hand field inquiry and research in the strict sense to an absolute minimum. If we attempted much detailed investigation the breadth of our surveys would disappear, and we have to rely principally upon research done by others which, as in the case of the Cadbury—*News Chronicle*—London Press Exchange Reader Interest Survey, drawn upon in our Press Report, is often generously made available to P E P although previously kept unpublished and confidential.

The main function of our Reports is to assemble and make available large masses of unpublished information and unwritten or even previously unconscious experience on problems of public affairs, and in the course of eliciting and sifting this material we seek to create an outlook favourable to constructive and continuous examination of the subject in future, when P E P has had to transfer the chief share of its attention to other subjects. It will be seen that the Reports combine the use of such obvious sources as blue-books, ordinary books, and professional and trade organisations and papers with the tapping of many other sources, by group or personal interview, by questionnaire and otherwise. In view of this method it would obviously be absurd to attach a personal name or names to a P E P Report, which is the work of a multitude of different hands. The value of P E P anonymity is now very widely appreciated; to depart from it would raise all sorts of rival claims to credit and all sorts of bargaining attitudes about the frank statement of facts which fortunately do not disturb the smooth flow of our present output. It is, moreover, one of the most encouraging things in the world to find how many busy and intelligent people both inside and outside the P E P groups are not only willing but eager to give an immense amount of time and trouble to seeing that the facts are fully and accurately stated, well knowing that they will not get the slightest personal credit for their contribution in the Report as it appears.

DISCUSSION.

The Chair was taken by MR. GEOFFREY CROWTHER, Editor of the *Economist*, who, at very short notice had kindly consented to deputise for Mr. Gerald Barry. Mr. Barry sent a message of great regret that, owing to the critical position of the international situation, he had felt it impossible to leave London.

In summarising his paper, MR. MAX NICHOLSON also referred to one or two points, not covered by the paper which dealt more particularly with the method of compilation of the *P.E.P. Report on the British Press*, but which were matters of some special interest to his audience. In the course of these remarks he touched on the shortcomings of Newspaper Libraries and the desirability of a Press Institute.

At the close of his address, the Chairman, in throwing the topic open to discussion, offered a defence for the Newspaper Libraries in relation to some of the criticisms made by Mr. Nicholson.

MR. HEADICAR said that he wanted to put one or two questions: "Who finances the P.E.P.? When a revised edition of the Press Report is issued, will it be possible to indicate in it what influence is exercised by various groups we hear about, such as the Astor group? How far is the character of a review affected by the amount spent on advertising in the daily press? Will P.E.P. in its further enquiries find out what happens to the price of a ton of coal from the time it leaves the mine to the moment it is unloaded into the consumer's cellar, also who controls the tea market and how is it possible for a grower to get his tea on the English market for the first time." As regards the last two problems (which he suggested were of the greatest importance to the whole community) the scanty literature so far written

was not of much value—those who wrote at all did not know, and those who knew did not write, or were not allowed to write.

MR. H. A. TAYLOR (who was unavoidably prevented from attending the Conference) communicated the following statement: "My chief criticism of the editorial structure of the *P.E.P. Report on the Press* would have been that it contained no mechanism for filtering out partisan and propagandist statements. In matters relating to the two journalistic organisations the book is in parts inaccurate and tendentious. To set a journalist to write on journalism without regard to whether he belongs to the professional or the trade union school of thought is like setting an Irishman to write on Ireland without ascertaining whether he be Ulsterman or Southerner. The result might be nothing more than a partisan tract; in certain parts the P.E.P. Report is no more than that.

"Personally, I was the more disappointed to discover this defect because I appreciated the necessity for a comprehensive review of the Press. The P.E.P. effort is in many respects excellent."

MR. JAMES J. EATON said that he welcomed the Chairman's spirited defence of Newspaper Libraries. That had tempered the wind to the shorn lamb—shorn very keenly by Mr. Nicholson! After the Chairman's remarks, no more need be said on the good work done by Newspaper Librarians. But he was bound to admit that a great part of Mr. Nicholson's criticisms was justified, the reason being that so many newspaper proprietors treated the library (if they had one at all) as the Cinderella department. Even so, in practice there is no need for a Newspaper Library to be short of current annual reference books, official documents and periodicals, or to be using out-of-date issues of such works—such a condition must be reckoned to the personal discredit of the librarian concerned.

Specialist works on various subjects, if the latest of their kind, would be of great value in a Newspaper Library, but there were often many gaps on the shelves for such books, because usually the librarian had to depend upon obtaining them from the reviewers—who did not like to part with them.

The library of a newspaper was one of its vital centres of information, and much of the inefficiency and inaccuracy described by Mr. Nicholson resulted from records made and kept imperfectly, owing to these libraries being staffed by journalists untrained in proper library methods. Mr. Eaton added that in recent years he had made tentative efforts, but so far without success, towards establishing a group of newspaper librarians within ASLIB, and he expressed the hope that perhaps P.E.P. or some similar organisation might be able to stimulate interest in, and help towards the formation of such a group, with a view to increasing efficiency in this field.

MR. NICHOLSON, replying to the discussion, outlined the method of finance of P.E.P., and explained some of the work which had been done in relation to the points brought up.

As regards Mr. Taylor's criticism, he explained that what was described as the professional school of thought had been fully taken into account and had obviously great attractions, but the group had quite definitely come to the conclusion that the methods applied in the closed professions could not operate in journalism without serious loss of freedom. The Report's finding that professional organisation must be mainly of a trade union nature was a recognition of the inherent peculiarities of journalism under conditions of free speech and did not arise from any bias against the raising of professional standards, which the Report had thought to strengthen by other means such as the proposed Press Tribunal.

MR. EDWARD CARTER (Hon. Secretary of ASLIB) in proposing a vote of thanks to Mr. Nicholson and to Mr. Geoffrey Crowther, the Chairman, said that he and, he felt certain, all those present, thought that this had been among the best papers ASLIB had ever had presented to terminate its Conference. He praised not merely Mr. Nicholson's description of the Report and the work involved in its compilation but also the Report itself, which was a model for any document of its kind; the presentation of a factual survey with a progressive constructive purpose.

He suggested that the word "press" was rightly used—press of time; press of space, and, in regard to journalistic staffs, press-gang methods in making men write and express opinions on matters alien often to their experience and conscience. This comment was made not in extension of irrelevant discussion but in explanation of some of the underlying difficulties that since they affected the press affected P.E.P.'s survey.

Mr. Crowther also especially deserved their thanks for coming at a time of particular stress for any journalist to deputise for the chairman who had been announced.

Note re the Establishment of an Information Section by the Council for Scientific and Industrial Research, Commonwealth of Australia.

By G. LIGHTFOOT, M.A.

The Council for Scientific and Industrial Research was established by Act of Parliament in 1927 as the national research organisation for the Commonwealth of Australia. Its principal function is to carry out researches in connection with problems affecting the primary or secondary industries of Australia. The Act included a provision for the establishment by the Council of an information service for the collection and dissemination of information relating to scientific and technical matters.

Up to the present time the activities of the Council have been directed almost exclusively to the solution of problems affecting the agricultural and pastoral industries, but the Commonwealth Government recently decided to extend the scope of the Council's functions into the field of secondary industry research. Funds have accordingly been made available for the establishment of a National Standards Laboratory, of certain Research Laboratories, and of an Information Section.

During the first eleven years or so for which the Council has been in existence, a considerable number of requests for information were received and dealt with, but no separate organisation was established for that purpose. Now, with the development of secondary industrial work it has been found necessary to form a special Information Section. The nucleus of that Section has already been established, and comprises three main divisions, viz.: (a) Information, (b) Library, and (c) Publications. It is intended gradually to extend the Information Section so as to enable it to perform the following principal functions in accordance with recommendations made by the writer after he had been afforded an opportunity of studying the work and organisation of information services in the United States of America, Canada, England, and certain continental European countries:

1. The preparation of bibliographical reference and abstracts of scientific papers, accompanied in appropriate cases by summaries of information, for the use of the Council, its Executive Committee, and its other Committees, and of scientific workers whether members of the Council's staff or otherwise.

2. The supply of scientific and technical information, in response to enquiries received from persons engaged in industry or from members of the public, including advice and assistance to persons who experience difficulties in manufacturing processes or the establishment of new industries.

3. The preparation of information relating to recent advances in the application of science to industry, new processes, etc., and the dissemination of such information through appropriate channels, e.g., Chambers of Manufactures, industrial associations, individual

industrial establishments, trade journals, etc. In this connection, as the work of the Section develops, and if the demand arises, it is proposed to make arrangements for the regular periodic distribution to selected industries or groups of industries of reference lists on the lines followed at the Technical High School, Charlottenburg.

4. The preparation and publication of articles, so far as practicable in non-scientific terms and omitting experimental details, explaining the objects and results of researches undertaken by the Council, in a form likely to be understood by those who would derive benefits from the application of the results.

5. The preparation and issue from time to time to members of the Council, its Committees, senior members of its staff, and bodies corresponding to the Council in other parts of the Empire, of confidential statements summarising the contents of reports received on the Council's work. In this connection it is proposed to follow a procedure similar to that of the Bureau of Records of the British Department of Scientific and Industrial Research.

6. The exchange of bibliographies, summaries of information, etc., with such institutions in other countries as may be arranged, and particularly with bodies corresponding to the Council in other parts of the Empire.

7. The editing, publication, and distribution of the Council's publications.

8. The preparation and collection of exhibits demonstrating the work of the Council.

The fact that the above comprehensive and ambitious scheme is being undertaken under the ægis of the Commonwealth Government will be of some special interest to those concerned with the work and development of information services in other countries. The scheme must, of course, be viewed from the standpoint of the stage of industrial development in Australia, where many industries are still on a relatively small scale and where access cannot readily be obtained by many individual manufacturers to sources of information available to manufacturers in other and older countries. Although the nucleus of the Information Section has now been established for only a few months, it is already being used widely by manufacturers as well as by scientific workers.

Final Session.

At the final session of the Conference the chair was taken by Mr. Arthur F. Ridley. The delegates passed votes of thanks to the Principal and Fellows of Lady Margaret Hall for their hospitality in allowing the Conference to be held at the college, and to the Bursar and the staff of the college for all their kindness in arranging for the comfort of the delegates. Votes of thanks were also passed to the authors of papers, the chairmen and stewards of meetings, and to the staff of ASLIB.

Report of the Thirteenth Annual General Meeting

The Thirteenth Annual General Meeting of members and associate members was held at 5.30 p.m. on Saturday, September 24th, 1938, at Lady Margaret Hall, Oxford.

Present : Thirty-nine members and associate members were present.

Chairman : Mr. Arthur F. Ridley (Chairman of the Council of the Association) acted as Chairman of the meeting.

ITEM I. Minutes of the Last Annual General Meeting.

The Minutes of the Twelfth Meeting, having been printed and circulated with the last Conference Report, were taken as read. It was agreed that they should be confirmed and signed as correct by the Chairman.

ITEM II. Audited Statement of Accounts for 1937-38.

The Audited Statement of Accounts, which had already been circulated, was presented by the Hon. Treasurer, MR. A. F. RIDLEY, whose motion for the adoption of the Accounts, seconded by MR. W. J. GALLAGHER, was carried unanimously. Suggestions for measures to enlarge the membership and to increase the income were put forward by MR. ERIC SIMONS, MR. H. L. JACKSON, and MR. GUY KEELING, and were noted for consideration by the ASLIB Council.

ITEM III. Election of Council and of the Honorary Officers.

The Chairman announced that the list of Council and Officers had been circulated, and suggested that the elections and re-elections should be taken *en bloc*. On the proposal of MR. ERIC SIMONS, seconded by MR. H. L. JACKSON, it was unanimously agreed that Sir William Beveridge, K.C.B., F.B.A., LL.D., B.C.L., should be elected President of the Association, that MR. A. F. Ridley should be re-elected Honorary Secretary and that the following should be re-elected as members of the Council: MR. B. C. Curling, Miss B. M. Dent, Mr. A. Farquharson, Dr. E. E. Lowe, Mr. F. C. Mitchell, Mrs. C. S. Orwin, Miss E. W. Parker. (The full list of members of the Council will be found on p. 5.)

ITEM IV. Appointment of Auditors.

MR. B. FULLMAN proposed, and MR. L. WHARTON seconded, that Messrs. West and Drake be reappointed auditors to the Association. The proposal was carried unanimously.

ITEM V. Report of the Year's Work of ASLIB.

MR. A. F. RIDLEY then presented the Report of the Year's Work of the Association (see p. 18), summarising the main items, and proposing its acceptance. This was seconded by Miss E. W. PARKER,

and carried unanimously. PROFESSOR R. S. HUTTON proposed a vote of thanks to those responsible for the organisation of the Conference and to the ASLIB Staff, to which the General Secretary replied. The General Secretary then conveyed a message of greeting to the members that had been telegraphed by Mr. Hemlin (Chalmers Tekniska Högskolas Bibliotek) and Miss Forcey (Transport and General Workers' Union) from Sweden. The Hon. Secretary, MR. EDWARD CARTER, sketched, in brief outline, some suggestions that had been put forward by the Hon. Officers for a scheme of sectional meetings, designed to encourage new members. These meetings would take place in the winter months and would be informal, thus entailing the minimum of expenditure.

Discussion followed on various aspects of ASLIB's work, and suggestions were made by a number of members as to possible means for increasing income.

A plea for decisive action with regard to the second edition of the *ASLIB Directory* was put forward and received strong support, whilst suggestions were made for meeting the financial difficulties of this undertaking.

The Chairman thanked members present for the several useful suggestions which had evolved from the discussion and promised to bring these matters to the notice of the Council.

ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX.

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30TH JUNE, 1938.

[illegible]

BALANCE SHEET — 30TH JUNE, 1938.

[illegible]

(Signed) ARTHUR F. RIDLEY, Hon. Treasurer.

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the Association's affairs, according to the best of our information and the explanations given to us and as shown by the Books of the Association.

13th July, 1938.

8, New Court, Lincoln's Inn, W.C.2.

(Signed) WEST AND DRAKE, Chartered Accountants.

Reports

Reports were received from the following organisations whose work is connected with and of special interest to members of ASLIB.

THE NATIONAL CENTRAL LIBRARY.

Report from Dr. Luxmoore Newcombe.—The year 1937-8 is outstanding as that in which library authorities throughout the British Isles demonstrated their interest in the welfare of the National Central Library, and their recognition of the essential part it plays in the library service of the country, by the splendid way in which they assisted the Trustees in their endeavour to meet the condition attached by the Lords Commissioners of His Majesty's Treasury to their annual grant. The total sum now received in the form of subscriptions from library authorities is £3,223, which, with the grant of £5,000 from the Treasury, £4,000 from the Carnegie Trust, and grants from other bodies, gives the Library a total income of £13,164.

The total number of books lent between libraries in the British Isles has increased by 13,562 to 139,346. Most of this lending is based on the National Central Library and much of it is conducted actually through that Library. This substantial increase shows that readers are taking greater advantage of the opportunities offered by the national and regional services. There is every indication that the issues both from the National Central Library and from the regional systems will continue to increase. Figures of the number of books issued indicate only a small proportion of the work of the Library. For instance, many of the applications necessitate a good deal of bibliographical research at the British Museum or elsewhere before the whereabouts of the book can be traced. Other applications are for books giving information on a subject, or books of which the applicant can give only incomplete information, as he may not know the author or may not be sure of the title. In particularly difficult cases the staff have the great advantage of access to the librarians of the special Outlier Libraries, who are experts in the literature of their own subjects, and to specialists at the British Museum and other Government libraries, as well as to members of the teaching staff of some of the universities.

The Outlier Libraries associated with the National Central Library lent 10,338 books during the year. The value of the assistance given by these libraries will be better appreciated when it is realised that almost without exception the books lent could not have been obtained from any other source. The list of Outlier Libraries includes a large number of the most important special libraries in the British Isles, some of which contain the finest collection in the world on their own particular subject.

With the growth of the regional union catalogues the regional library systems are able to make an increasingly important contribution to the national service. The whole of England and Wales is now covered by a series of nine regional systems, with a total of no less than 476 co-operating libraries, a total which includes eighteen university libraries and fifteen special libraries. These libraries lent 51,422 books, an increase of 8,145 on the previous year's issues. It is of special interest to members of ASLIB to note that among those to whom books have been issued by the regional systems are many persons working in special and university libraries. The university libraries also are taking their full share in lending books to other libraries, having lent 4,345 books.

There is a considerable increase in the number of books borrowed from libraries in foreign countries for the use of libraries in the British Isles, 248 books having been borrowed from libraries in fifteen countries, as compared with 145 books from libraries in nineteen countries in the previous year. In return, British libraries have been able to lend to libraries in twenty foreign countries 415 books, as compared with 357 books to libraries in thirteen countries in the previous year. British libraries continue to lend many more books than they borrow (415 as against 248), but four countries have each lent more than they have borrowed. Of the 248 books borrowed from foreign libraries Germany has supplied no less than 151. This is due to a large extent, if not entirely, to the splendid organisation at the Berlin State Library, the staff of which have access to a union catalogue covering nearly all the important libraries in Germany. The National Central Library has undertaken to co-operate with the British Council, with a view to assisting teachers and post-graduate and research students attending English courses in foreign universities to obtain on loan English books to which they previously had not access.

The total number of books on which the National Central Library can now draw

(apart from those available in foreign libraries) is over twenty-one and a quarter million. The union catalogue of this great collection of books is making steady though slow progress, the number of entries at the National Central Library being 2,455,000, and in Wales 597,000, making a grand total of 3,052,000. The *Union Catalogue of the Periodical Publications in the University Libraries of the British Isles*, which was published in August, 1937, makes available for the first time a complete list of all periodical publications both humanistic and scientific, English and foreign, whether still appearing or not, so far as they are possessed by the library of any university or university institution in the British Isles. This catalogue has been of the greatest importance in arranging with little delay for the loan of periodicals.

An event of particular interest is the establishment, on 1st January, 1938, of a fully equipped Bureau of American Bibliography. This has been made possible by a generous grant of £4,400 from the Rockefeller Foundation, and the gift of a complete set of the Library of Congress printed cards (the only set in the British Isles) generously presented by the Library of Congress. The object of the Bureau is to provide at the National Central Library a centre from which information can be obtained about American books. A bureau of this nature will perform a valuable service, not only to librarians and scholars in the British Isles, but often, through the international work of the Library, to librarians and scholars on the Continent. In addition to the Library of Congress cards—which will form the basis upon which the work of the Bureau will depend—all the most important American reference books and bibliographies, as well as all publishers' lists, are being obtained. The material in the Bureau of American Bibliography will be available through the post or by personal visit to all librarians and other persons desiring information about American books.

BRITISH SOCIETY FOR INTERNATIONAL BIBLIOGRAPHY.

During the past year the Society has continued to enjoy increased membership and activity.

The Tenth Ordinary Meeting took place on November 23rd, 1937, when Mr. Lindgren, of the British Film Institute, read a most interesting paper entitled "The Classification and Filing of Films." The Tenth General Meeting and Eleventh Ordinary Meeting took place on March 31st, 1938. At the latter Mr. B. J. Brajnikoff read a paper entitled "The Abstracting of Russian Literature." As a result of the discussion which followed a Committee was set up to investigate the abstracting of Russian literature in this country and if possible to find means of co-ordinating the work that is being done. The following were elected to the Committee: Professor Pollard (President, B.S.I.B.), Dr. Bradford, Mr. Brajnikoff, Dr. Brooks (Meteorological Office), Major Guilan (Institute of Metals), Mr. Hellyer (Institute of Naval Architects), Mr. Johnson (Editor of *Engineering*), Miss Lewis (British Aluminium Company), Mr. Pool (Imperial Bureau of Animal Diseases), and Miss Chapman, Secretary (Science Library). A meeting of the Committee was held on April 28th, 1938, when various other abstracting bodies were asked to send representatives.

Mr. Lancaster-Jones and Mr. Pledge having resigned from the offices of Secretary and Treasurer respectively, Miss Gosset and Dr. Brooks were elected in their places. The composition of the Council for the current year is as follows: President, Professor A. F. C. Pollard; Vice-President, Dr. S. C. Bradford; Hon. Treasurer, Dr. C. E. P. Brooks; Hon. Secretary, Miss M. Gosset; Members of the Council, Professor Andrade, Messrs. Astbury, Curling, Dreaper, Johnson, Lancaster-Jones, Menab, and Dr. Priestley.

The publication of the English edition of the Universal Decimal Classification is being continued and it is hoped that a large part of Class 5, Pure Science, which is now in the press, will be published by the end of the year.

During the year the undermentioned publications have adopted the U.D.C. for the classification of bibliographical lists of references and abstracts: the Library Circular of the Post office Engineering Research Department; the *Zeitschriften-schau der Forschungsanstalt der deutschen Reichspost*; *Telegraphen-Fernsprech und Funk Technik* [articles]; *Vereinigung der Elektrizitätswirtschaft, Elektrowärme* [articles].

The Society was responsible for organizing the Fourteenth International Conference on Documentation held at Oxford and London from September 21st to 26th.

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NOTE.—*This is not a complete subject index to the contents of the papers, but only to the names of speakers and the titles of papers, etc. Copies of the fourteen previous Reports can be obtained from the office of the Association.*

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